

RadCOM

£3.95 Vol 79 No. 9

September 2003

INSIDE



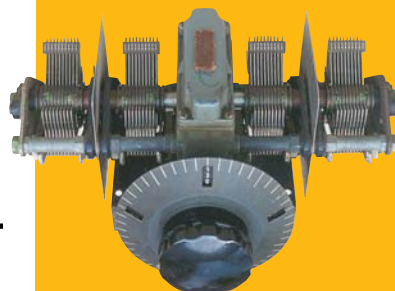
Antenna Review



20m & 40m E-H antennas **p21**

BEGINNERS
A '3G radio family';
QSLing via the bureau

WHATEVER NEXT
Go-faster TCP;
Competition for GPS



TECHNICAL TOPICS
Pat Hawker on what
makes a good
receiver

Raynet Today

Amateur radio emergency communications still has a role to play **p34**



Leicester show

New products at this year's show **p28**



SPACE
What's a 'Cubesat'?
Turn to p55 to find out!



IOTA

The new IOTA 1000 Islands trophy **p41**

PARTY IN THE PARK

p12





carriage charges: A=£2.75, B=£6, C=£10

3 STORES TO CHOOSE FROM

WEB ORDERING
WWW.WSPLC.COM

DON'T MISS
LOWE ELECTRONICS
OPEN DAY SATURDAY
SEPTEMBER 6th 2003



Come and visit
Yaesu,
Kenwood &
Icom stands.
FREE food and
bargain prices.
Opens at 10 am.
Be there!

NEW HIGH SIERRA SIDEKICK



80m to 6m 200W Mobile Whip
Motorised Tuning
Can Be 'Mag' Mounted*

The large diameter coil offers efficiency higher than any other similar antenna, in a very compact size. Band changing is a button press away!

In Stock **£259 B**

- 3.5 - 60MHz
- 200 Watts
- 15 in base unit
- High Q Coil
- 3ft whip
- 12V motor
- Control box
- DC cables
- 3/8" stud mount
- Made in USA

* Needs our 3-way magnetic mount

NEW ICOM IC-E208

£319 B



VHF/UHF FM Dual Band Mobile Transceiver

*Frequency range 144-146MHz, 430-440MHz Tx
*55/50W (3 power steps each band) *Wideband Rx 118-173, 230-549 & 810-999MHz *512 memories with Alphanumeric names *FM narrow capability *104x2 DTCS, 50 CTCSS tone squelch operation *16 DTMF channels *Detachable front panel *Extra large LCD with choice of colours green, amber, yellow *Large combined tuning dial & band switch *HM-133 remote control microphone - supplied *Packet ready for 9600/1200bps through mini DIN or 1200bps through mic socket *Supply 13.8V

NEW YAESU FT-2800M

£159 B



*144-146MHz *FM *137 - 174MHz expanded Rx
*RF Pwr 65/25/10/5W *25/12.5kHz channel spacing
*High/Low deviation *Supply 13.8V DC
The FT-2800M is the latest model from Yaesu with 65 Watts High Power, rugged construction, excellent receiver performance and direct keypad entry.

HF TRANSCEIVERS

ICOM IC-756 PRO II **£1999 C**



Flagship of the Icom range of HF transceivers. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit.

ICOM IC-7400 **£1249 C**



HF/VHF 100W transceiver. Features large LCD with spectrum scope, auto ATU and same DSP system as IC-756PRO II.

ICOM IC-703 NEW **£599 C**



HF/ 50MHz Transceiver
0.1-10W Portable,
Mobile, Base-Station.
(9-15.87V DC) Designed especially for the

Foundation Licence/QRP. Built-in features auto ATU, DSP memory keyer. (5W when using 9.6V batts) Battery and Carry Pack to follow.

ICOM IC-706 IIG DSP **£789 C**



HF/VHF/UHF mobile DSP transceiver. Its relative small size not only makes it a great mobile rig but also for fixed station use as well. HF general coverage and VHF & UHF.

ICOM IC-718 **£499 C**



HF 100W transceiver. Covers all HF bands plus wideband receive. C/w auto notch, dual VFO, SWR meter etc. Options include extrnl ATU DSP & filters.

KENWOOD TS-2000 **£1599 C**



Top-of-the-range Kenwood transceiver. HF/VHF/UHF or up to 23cm with the optional module. Built-in auto ATU, DSP and its unique TNC.

KENWOOD TS-870S DSP **£1399 C**



HFDSP 100W base station. Excellent all round rig great for DX working with its ability to winkle out weak stations using its true IF DSP. No filters to buy.

KENWOOD TS-570DGE **£849 C**



HF100W base station with built-in auto ATU. Very popular rig, excellent performance on SSB and CW. Two fitted antenna sockets - very handy.

ICOM IC-910X with 23cm **£1249 C**



Icom's all mode VHF/UHF transceiver with 23cm. Large clear LCD with lots of facilities. 100W on VHF and 75W on UHF, 10W on 23cm. IC-910H version £1149

Base Model IC-910H £1129

HF TX / LINEAR AMPLIFIERS

YAESU FT-1000 MKV **£2349 C**



200W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC PSU - Acknowledged as one of the finest DX rigs on the market. Superb tailored audio and the ability to select Class A bias for dramatic signal purity.

YAESU FT-1000 FIELD **£1749 C**



100W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC / 13.8V DC - Building on the success of the FT-1000MKV, the Field has become a respected leader in its class.

YAESU FT-920AF **£1049 C**



100W HFplus 6m transceiver. 100kHz - 30MHz, 48 - 56 MHz Gen coverage Rx, 100 memories. Internal ATU with 100 tuner memories, large backlight LCD, Built-in memory keyer, 13.5V DC. Now includes FM unit and 6kHz AM filter.

LAST FEW

YAESU FT-897 **£989 C**



100W HF rig plus 2m and 70cms (50W/20W) 13.8V external supply / internal optional FP-30V AC power supply / self powered portable using optional Ni-MH pack at 20W output. Compatible with FC-30 auto ATU and ATAS 120/100 antennas. The "must have" radio for 2003.

YAESU FT-847 **£1199 C**



1.8 to 440MHz, this all-in-one transceiver offers unbeatable value. 100W on HF plus 6m, and 50W on 2m and 70cm. You get genuine RF clipping on SSB for up to 6dB gain and there are 4 separate antenna sockets.

YAESU FT-857 NEW **£799 C**



HF / 50 / 144 / 430MHz Mobile Transceiver. HF/6m 100W, 2m 50W, 70cm 20W. (13.8V DC) Developed on the FT-897 and FT-817 transceivers. Built-in features 32 colour display, spectrum scope, AM airband aircraft reception, built-in memory keyer, detachable front panel.

YAESU FT-817 **£539 C**



bhi DSP Module now available!

£89.95

160m - 70cms. Up to 5W output all modes. **Ours includes battery and charger.** Add £110 for DSP ready fitted.

NEW DSP Module
There is **NO** new FT-817 DSP! The fact is that the UK manufacturers, **bhi**, (of whom we are their largest distributor), have produced a lovely 4-stage DSP module that can be fitted inside the FT-817. The module costs £89 plus a fitting charge of £25 for retro-fitting to existing models. This includes installing a mini switch and LED on top cover.

TOKYO HY-POWER HL-50B **£265.95 C**

FT-817 VERSION !



This model has been specifically designed for the FT-817. Enjoy up to 50 Watts output



VHF I UHF TRANSCEIVERS

ICOM IC-2725E NEW £309 C



The Icom IC-2725 dual band FM transceiver is proving very popular. Easy to install, the controller is separated from the main unit - great where space is limited.

ICOM IC-207H £249 C



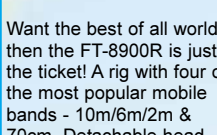
Great budget price dual band FM 50W/35W transceiver. Simple band operation. Front panel detachable from main unit if required.

ICOM IC-2100H £229 C



2m 55W FM mobile. Commercial grade, rugged construction. One piece die-cast aluminium chassis. Selectable green or amber display.

YAESU FT-8900R NEW £349 C



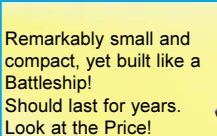
Want the best of all worlds then the FT-8900R is just the ticket! A rig with four of the most popular mobile bands - 10m/6m/2m & 70cm. Detachable head.

YAESU FT-817 £539 C



All bands & All modes gives you a totally portable HF DX or VHF/UHF station. *Ours includes* battery and charger.

YAESU FT-1500M £179 B



Remarkably small and compact, yet built like a Battleship! Should last for years. Look at the Price!

KENWOOD TMD-700E £449 C



Certainly the best dual band mobile transceiver with APRS. Does not need extra high cost boards to function. The only extra if required is a compatible GPS receiver.

KENWOOD TM-V7E £359 C



A lovely cool blue display, easy with 50/35W output. 50W/35W plus 280 memos and five storable operating profiles.

KENWOOD TM-G707E £289 C



If you are looking for simplicity and low cost, here's the answer. 2m & 70cm with detachable front panel and "Easy operation mode." GREAT!

VHF/UHF TX & HANDHELDS

YAESU VX-7R NEW £299 B



6m/2m/70cm

Available in Silver or Black

The VX-7R is the best outdoor handie ever. The case, keypad, speaker and connectors are all sealed against water damage. Wide Frequency coverage from 500kHz to 900MHz the VX-7R is ideal for monitoring a variety of broadcasts. The display is a dazzling 132x64 dot matrix providing easy-to-read frequencies and information plus pictorial graphics.

YAESU VX-150 £115 B



The VX-150 is a fully featured compact yet incredibly rugged 2m 5W Handheld. Features include direct keypad frequency entry, CTCSS, DTMF, 1750Hz tone calling, wide/narrow deviation selection. It has a die-cast case, large high output speaker, illuminated keypad and battery voltage meter.

YAESU VX-110 £109 B



Combining the ruggedness of the VX-150 with the simplicity of 8-Key operation, the VX-110 is a fully featured 2m handheld ideal for the most demanding of applications. It has a die-cast case, large speaker and illuminated keypad.

ICOM IC-E90 NEW £269 B



The new E-90 offers triple band coverage of 6m, 2m and 70cms. Up to 5W output and rx coverage from 495kHz - 999MHz makes this a very attractive rig.

ICOM IC-T3H £129 B



The IC-T3H 2m handheld features tough quality but with slim looks. Its striking green polycarbonate case has been ergonomically designed. The rig is capable of providing a powerful 5.5W output with either Ni-Cad or Ni-MH battery packs. Supplied with charger and rechargeable battery.

KENWOOD TH-D7E £319 B



DATA COMMUNICATOR

One of the most successful handhelds over the past few years. It has a built-in TNC for Packet use. You can also use it for APRS operation in conjunction with an external GPS unit. Plus NMEA, 200 memos, and up to 5W output.

KENWOOD TH-F7E £259 B



WITH EXTRA WIDE RX COVERAGE

- 144-146MHz Tx/Rx: FM
- 430-440MHz Tx/Rx: FM

Up to 6W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

KENWOOD TH-G71E £199 B



If you want an excellent 2m/70cm dual-bander then you can't go wrong with the TH-G71. Fully functional with three power levels, 200 memories, CTCSS tone encoder/decoder, illuminated keypad and backlit LED.

VHF I UHF ANTENNAS

MOBILE ANTENNAS

DIAMOND ANTENNA (PL-259 base type) NEW

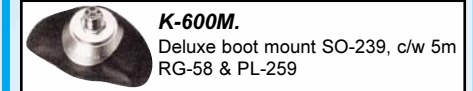
CR-8900. Quad bander 6m/10m/2m/70cm. Length 1.26m, max pwr 60W with fold over base. **£72.95 B**

WATSON ANTENNAS (PL-259 base type)

| | | | |
|--------------------|---------------------------------|---------------|---|
| W-2LE | 2m quarter wave 2.1dBi 0.45m | £9.95 | A |
| W-285S | 2m 3.4dB 0.48m (fold over base) | £14.95 | B |
| W-77LS | 2m/70cm 0/2.5dB 0.42m | £14.95 | B |
| W-770HB | 2m/79cm 3/5.5dB 1.1m | £24.95 | B |
| W-7900 | 2m/70cm 5.6/7.6dB | £32.95 | B |
| W-627 | 6m/2m/70cm 2.15/4.8/7.2dB 1.6m | £34.95 | B |
| WGM-270 NEW | 2m/70cm On glass 3.7m coax 50W | £29.95 | B |

MOBILE BASES

DIAMOND

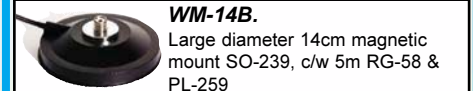


K-600M.

Deluxe boot mount SO-239, c/w 5m RG-58 & PL-259

| | | | |
|---------------|----------------------------------|---------------|---|
| AML | Gutter mount fold over type | £15.95 | A |
| K-11 | Universal gutter mount | £24.95 | A |
| K-33 | Adjustable hatch mount | £23.95 | A |
| K-400 | Adjustable boot mount heavy duty | £26.95 | A |
| K-600M | Deluxe boot mount + cable | £49.95 | B |
| DPK-TR | Stainless Steel boot mount (ECH) | £18.95 | A |

WATSON



WM-14B.

Large diameter 14cm magnetic mount SO-239, c/w 5m RG-58 & PL-259

| | | | |
|----------------|---------------------------------|---------------|---|
| W-3HM | Adjustable hatch mount | £14.95 | A |
| WM-08B | 8cm mag mount, 5m cable PL-259 | £9.95 | A |
| WM-14B | 14cm hvy duty mag mount+cable | £12.95 | A |
| WSM-88V | BNC mag mount plus 3m cable | £14.95 | A |
| W-3CK | 5m 5D-FB cable assembly+pigtail | £18.95 | A |
| W-ECH | 5m standard cable kit assembly | £12.95 | A |

BASE STATION ANTENNAS

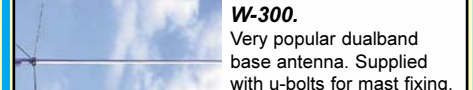
DIAMOND



VHF/UHF Dual Bander

| | | | |
|---------------|--------------------------------|---------------|---|
| X-200 | 2m/70cm colinear 6/8dB 2.5m | £79.95 | C |
| X-300 | 2m/70cm colinear 6.5/9dB 3.1m | £99.95 | C |
| V-2000 | 6m/2m/70cm 2.15/6.2/8.4dB 2.5m | £89.95 | C |

WATSON



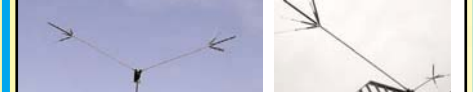
W-300.

Very popular dualband base antenna. Supplied with u-bolts for mast fixing.

| | | | |
|---------------|--------------------------------------|---------------|---|
| W-30 | 2m/70cm colinear 3/6dB 1.15m long | £39.95 | C |
| W-50 | 2m/70cm colinear 4.5/7.2dB 1.8m long | £49.95 | C |
| W-300 | 2m/70cm colinear 6.5/9dB 3.1m long | £64.95 | C |
| W-2000 | 6m/2m/70cm 2.15/6.2/8.4dB 2.5m | £69.95 | C |

DIAMOND HFV5 NEW

NEW - DIAMOND HFV5 ULTRA COMPACT DIPOLE 40, 20, 15, 10, 6M. 100 WATTS 4M LONG!



This is a superbly engineered rigid dipole for portable or balcony use. Balun fed, it comes with centre mounting plate for up to 2" diameter fixing. Each band is individually adjustable.

- * 40 - 6m
- * 150 Watts
- * 40m = 40kHz, 20m = 160kHz 15m = 200kHz,
- * 10m = 340kHz, 6m = 1.3MHz * SO-239 Balun Fed
- * 2" mounting bracket * 4m long / 1.95kg

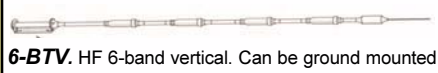
NEW

HFV5 Compact HF Dipole 40-6m £219.95 C

HF ANTENNAS

VERTICAL ANTENNAS

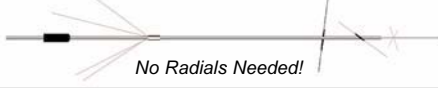
HUSTLER BASE ANTENNAS



- 6-BTV NEW** 80-40-30-20-15-10m 1kW PEP **£239.95** C
5-BTV 80-40-20-15-10m 7.64m 1kW **£209.95** C
4-BTV 40-20-15-10m 6.52m 1kW PEP **£169.95** C

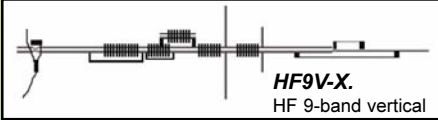
CUSHCRAFT BASE ANTENNAS

MA5V HF 5-band compact vertical.



- MA5V** 20-17-14-12-10m 250W PEP **£229.95** C
R8 40-30-20-17-15-12-10-6m 1.5kW **£529.95** C
R6000 20-17-15-12-10-6m 1.5kW PEP **£349.95** C

BUTTERNUT BASE ANTENNAS



- HF9V-X** 80-6m 7.9m 1kW PEP **£365.00** C
HF6V-X 80-40-30-20-15-10m 7.9m 2kW **£315.00** C
HF2V 80-40m 9.75m (160m opt) 1kW **£230.00** C

HY-GAIN BASE ANTENNAS

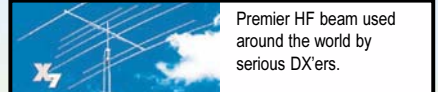


- AV-640** 40-6m 1.5kW, 300W 6m (PEP) **£399.95** C
AV-620 20-6m 1.5kW, 500W 6m (PEP) **£299.95** C
AV-14AVQ 40-20-15-10m 1.5kW PEP **£179.95** C
AV-12AVQ 20-15-10m 1.5kW PEP **£139.95** C
DX-88 80-10m 1.5kW, 250W 30m **£395.95** C

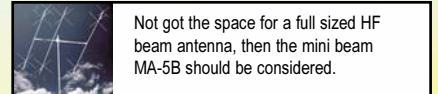
HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT

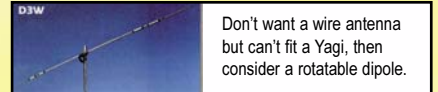
Hurry Cushcraft prices increase in September!



- X-7** 20/15/10m 7 el. Yagi 2kW **£699.95** D



- MA-5B** 10-12-15-17-20m 4 el. Yagi 2kW **£349.95** D
A4-S 10-15 & 20m 4 el. Yagi 2kW **£599.95** D
A3-WS 12 & 17m 3 el. Yagi 2kW **£399.95** D
D-3 10-15-20m dipole element 2kW **£249.95** C



- D-3W** 12-17-30m dipole element 2kW **£249.95** C
D-4 10-40m dipole element 2kW **£339.95** C
D-40 40m dipole element 2kW **£299.95** C
TEN-3 10m 3 el. Yagi 2kW **£219.95** C
ASL-2010 13.5-32MHz 8 el. log periodic **£799.95** C

RADIO WORKS



- CW-160** 160-10m 76.8m long **£139.95** C
CWS-160 160-10m 40.5m long **£134.95** C
CW-80 80-10m 40.5m long **£99.95** C
CWS-80 80-10m 20.1m long **£119.95** C
CW-40 40-10m 20.1m long **£94.95** C
CW-20 20-10m 10.36m long **£84.95** C
CW-620 20-6m 9.7m (32ft) long **£94.95** C
G5RV PLUS 80-10m with balun 31m (102ft) long **£64.95** B

HF ANTENNAS

Super Antennas USA - Portable HF Ants

Save £100



YP-2 Portable 2 el Beam Configure for 20m to 6m

* Tune to one of the six bands * 200 Watts * Full size on 10m and 6m. * Packs down into supplied bag, 36" long * Fits masts up to 1.5" * Ideal for portable operation. Weighs approx 3kg

YP-2 - Was £399 Now £299!



MP-1 Portable whip for 40m to 70cms! Ideal for FT-817 etc.

£159.95

* Centre variable loading * 40m to 70cms * 150W pep * Total length extended 185cm approx. Packs down to pocket size * Includes universal table/fence bracket and radial wire * SO-239 socket on bracket.

MOBILE ANTENNAS

HUSTLER

Standard Resonator 400W (most sections not included)



- | | | | |
|--------------|----------------|---------------|---|
| RM-10 | 10m 150-250kHz | £19.95 | B |
| RM-11 | 11m 150-250kHz | £19.95 | B |
| RM-12 | 12m 90-120kHz | £19.95 | B |
| RM-15 | 15m 100-150kHz | £19.95 | B |
| RM-17 | 17m 120-150kHz | £24.95 | B |
| RM-20 | 20m 80-100kHz | £24.95 | B |
| RM-30 | 30m 50-60kHz | £26.95 | B |
| RM-40 | 40m 40-50kHz | £26.95 | B |
| RM-80 | 80m 25-30kHz | £29.95 | B |
- Super Resonator 1kW (most sections not included)
- | | | | |
|----------------|----------------|---------------|---|
| RM-10-S | 10m 250-400kHz | £24.95 | C |
| RM-15-S | 15m 150-200kHz | £26.95 | C |
| RM-20-S | 20m 100-150kHz | £31.95 | C |
| RM-40-S | 40m 50-80kHz | £37.95 | C |
| RM-80-S | 80m 50-60kHz | £51.95 | C |

Lower Mast Sections

- | | | | |
|-------------|------------------|---------------|---|
| MO-1 | 54" (FOLD @ 22") | £33.95 | C |
| MO-2 | 54" (FOLD @ 27") | £33.95 | C |
| MO-3 | 54" (NON FOLD) | £26.95 | C |
| MO-4 | 27" (NON FOLD) | £22.95 | C |

Mobile Mount Accessories

- | | | | |
|--------------|---|---------------|---|
| SSM-1 | Ball mnt stainless steel spring&stud | £45.95 | B |
| SSM-2 | Ball mount | £28.95 | A |
| SSM-3 | Stainless steel spring & stud | £24.95 | A |
| HOT | Trunk lip mount | £24.95 | A |
| RSS-2 | Stainless steel resonator impact spring | £10.95 | A |
| QD-2 | Quick disconnect adaptor | £19.95 | A |
| VP-1 | Multi-band adaptor | £7.95 | A |

PORTABLE ANTENNAS

MIZUHO (FOR FT-817)

- ATX-WBN** Walkabout 80-6m Whip 1.5mBNC **£49.95** B



Special price on Walkabout whips, three to choose from with three different connectors.

- ATX-WPL** Walkabout 80-6m Whip 1.5mSO-239 **£49.95** B
ATX-W38 Walkabout 80-6m Whip 1.5m 3/8 **£49.95** B



Range of single band HF antennas with BNC connection. Ideal for FT-817.

- | | | | |
|--------------|-------------------------------|---------------|---|
| AT-80 | Single band 80m whip with BNC | £24.95 | B |
| AT-40 | Single band 40m whip with BNC | £24.95 | B |
| AT-30 | Single band 30m whip with BNC | £19.95 | B |
| AT-20 | Single band 20m whip with BNC | £19.95 | B |
| AT-17 | Single band 17m whip with BNC | £19.95 | B |
| AT-15 | Single band 15m whip with BNC | £19.95 | B |
| AT-12 | Single band 12m whip with BNC | £19.95 | B |
| AT-10 | Single band 10m whip with BNC | £19.95 | B |

ANTENNA TUNER UNITS

MFJ 989C VERSA TUNER V **£379.95** C



High power tuner.*1.8-30MHz *3kW *6-way Antenna/load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV

MFJ 986 DIFFERENTIAL-T TUNER **£349.95** C



Differential capacitor & Roller inductor.*1.8-30MHz *1.5kW *6-way Antenna/load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV

MFJ 949E DELUXE VERSA TUNER II **£159.95** B



Firm favourite with HF operators.*1.8-30MHz *300W *3-way Antenna selector *Dummy Load socket *Internal balun *X-needle meter *Peak & AV

MFJ 962D VERSA TUNER III **£279.95** C



Ideal tuner for max UK legal power.*1.8-30MHz *1.5kW *6-way Antenna/load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV

MFJ 921 VHF DUAL BAND TUNER **£74.95** B



This tuner helps you get perfect VSWR and offers some filtering as well.*144/220MHz *200W max *Power meter *Rear panel earth terminal

MFJ 906 6 METRE TUNER **£89.95** B



Help match your 6m rig to your antenna.*50-54MHz *100W FM *200W SSB *X-needle meter, 0-60W & 0-300W *By-pass position for tuner

MFJ 931 ARTIFICIAL GROUND **£94.95** B



Places rig near to actual ground potential.*1.8-30MHz *Ground current meter *Used where no earth ground is possible *Reduces TV/RFI *Resonates random wire

MFJ 267 DUMMY LOAD/WATT METER **NEW £129.95** B



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- MFJ-259B** HF/VHF digital analyser **£269.95** B

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THE NATIONAL SOCIETY WHICH
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Member society of the
International Amateur Radio Union

**Patron: HRH Prince Philip,
Duke of Edinburgh, KG, KT**

Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Subscriptions Department from which full details of Society services may also be obtained.

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HONORARY TREASURER:

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R Ricketts, GW7AGG

P Berkeley, M0CJX

I Rosevear, G3GKC

Details of the Society's volunteer officers can be found in the RSGB Yearbook 2003

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Website: www.rsgb.org

WebPlus: Members-only web site

www.rsgb.org/membersonly Use your callsign in lower case as the user name, and your membership number (see RadCom address label) as the password.



RSGB Matters

Board and National Council Elections 2003

It is formally announced that the following vacancies will arise to the Board and National Council for the 2003 elections.

The Board – Two Vacancies

The President, Bob Whelan, G3PJT, stands down after completing his term as President.

Robin Page-Jones, G3JWI, retires after serving six years on the Council/the Board.

Members who wish to stand for election to the Board must have been a corporate member of the RSGB for at least *two* years and need to obtain nominations and supporting signatures from *ten* or more corporate members of the Society in good standing.

National Council – Four Vacancies

Region 2: Scotland East and the Highlands.

Peter R Thomson, GM1XEA, currently co-opted, is formally standing for election.

Region 8: Northern Ireland. Jeff Smith, M10AEX, standing down on taking up the office of President.

Region 9: London and the Thames Valley.

Paul Berkeley, M0CJX, currently co-opted, is formally standing for election.

Region 10: South and South East. Ivan Rosevear, G3GKC, not standing for election.

Candidates are welcome for all vacant positions, regardless of whether or not an incumbent is standing for election.

Members who wish to stand for election to the National Council must reside in the relevant Region. They must have been a corporate member of the Society for at least *two* years and need to obtain the nominations and supporting signatures of a minimum of *five* but not more than *ten*, corporate members of the Society in good standing and residing in the Region in which the candidate is standing.

Election forms are available from the General Manager at RSGB HQ.

Prospective candidates should be aware that completed election papers must be returned to RSGB HQ not later than 1700 on **Wednesday 1 October 2003**. Details of candidates standing in the election, plus voting forms, will appear in the November edition of *RadCom*.

Peter Kirby, GOTWW, Company Secretary

AROS TALKS

The RSGB Amateur Radio Observation Service (AROS) coordinator, Barry Scarisbrick, G4ACK, is giving a talk on the work of AROS at the **Jersey Amateur Radio Society on 12 September**. Details from Anne Mourant, tel: 01534 734948.

2003 LF EXPERIMENTER'S AWARD

Nominations are invited for this annual RSGB award also known as the Nevada Cup from its sponsor

Nevada Communications Ltd. The award is for the most significant contribution by an RSGB member towards scientific or engineering development of receiver and/or transmitter design, modulation technique, aerial design or propagation on the former 73kHz or current 136kHz amateur bands. Nominations must either include a full description of the work or references to where it is published, and must indicate aspects which are original. Nominations should

addressed to the HF Committee at RSGB HQ or e-mailed to John, G3WKL, at g3wkl@btinternet.com by **Monday 22 September**.

BOARD MEMBER AT CHESTER CLUB

RSGB Board Member David Hicks, G6IFA, will be giving a talk entitled 'The RSGB Inside Out' at the Chester & District Radio Society, The Burley Memorial Hall, Waverton, Chester CH3 7QN, on **Tuesday 23 September** at 8.00pm. Visitors will be very welcome.



RSGB BLAZER BADGE

David Pratt, G4DMP, kindly sent in this illustration of an RSGB blazer badge which was available from the Society in 1956. The crest was designed by the late Louis Varney, G5RV, and the Latin inscription means "Through our Art to Friendship". The top left-hand quarter depicts the Great Bear constellation, representing northern latitudes; the bottom right-hand quarter depicts the South Cross constellation, representing southern latitudes; the top right-hand quarter depicts a lightning flash, symbolising amateur radio communications; while the bottom left-hand quarter depicts a globe, symbolising the international aspects of amateur radio.

Mark Allgar, M1MPA/M3MPA, the RSGB Commercial Manager, adds: "Further to the 'Last Word' letter in the August *RadCom* the following information has come to light. In 1920 the ARRL ran a competition to design its badge and came up with the design that is still in use today. Four years later the RSGB ran its own competition which arrived at the 'old' design of logo. At this time the Society had a 'T&R' section, representing the 'communicators' rather than the 'experimenters'. It appears that the T&R section decided to have their own badge which they derived from the ARRL's and which became the basis of the current RSGB logo. On 1 July 1942 the Society officially dropped the 'old' RSGB logo and adopted the current badge. From then until now all Society correspondence etc has carried this logo." The emblem was designed by E Hayter Simmonds, G8QH. Thanks to John Heys, G3BDQ; Philip Davies, RS95258, and Jim Taylor, G4REU, for more on the RSGB Badges.

RESTRICTION ON 70cm PACKET/REPEATER LICENSING

The RSGB has been informed by the Radiocommunications Agency that the Primary User has stated that it is unable to clear any outstanding or new Packet Mailbox/Nodes or Repeaters in the 70cm band for the foreseeable future. The RA has stated that it will contact the RSGB as soon as the restriction has been lifted or if any further information is received regarding this issue.

CORRECTION

In the August 'In Practice' column, the Belling Lee part number of the mains filter was quoted incorrectly. It should be 'SF4240-16/01'. In fact RS Components do not stock this component at all. The author Ian White, G3SEK, apologises for this error. For further updates, please check the 'In Practice' website at www.ifwtech.co.uk/g3sek

WANTED: DRRMs FOR REGION 13

Bryn Llewellyn, G4DEZ, the RSGB Regional Manager for Region 13, the East Midlands, is looking for volunteers to act as Deputy RSGB Regional Managers in all the Districts of his Region (Leicestershire/Rutland; Lincolnshire/Nottinghamshire; Derbyshire; and Bedfordshire/Northamptonshire). As Bryn says, "The area is very large and is impossible to cover alone!". Please contact g4dez@rsgb.org.uk if you would like to help.

HIGH-PROFILE RSGB STATION IN IARU EVENT

Months of planning for the RSGB Headquarters station GB5HQ came to fruition on the weekend of 12/13 July [see the article on page 58 of the July *RadCom* and 'RSGB Matters' August 2003]. Project coordinator Dave Lawley, G4BUO, declared the GB5HQ

RSGB PUBLICATIONS FOR THE ALBANIA PROJECT

A project has been launched to raise the profile of amateur radio in Albania. Engineering students at the University of Tirana will study amateur radio as part of their degree courses, using the RSGB *RAE Manual* and other material as their course books. The idea is to make amateur radio a practical part of the training for university qualifications and if successful it will lead to a group of leading Albanian professional engineers with an amateur radio background. The IARU project is the brainchild of well-known Finnish DXer Martti Laine, OH2BH. Roger Brown, G3LQP, is the UK contact and is planning to visit Tirana later in the year to launch the project there.



PHOTO: REINHARD GEISLER, 1L1UF

Martti Laine, OH2BH; Roger Brown, G3LQP, and RSGB President Bob Whelan, G3PJT, hold an impromptu meeting on the Albania Project at the Ham Radio exhibition in Friedrichshafen, Germany.

operation a success: "this was a very challenging project, and we experienced problems with Internet connectivity at several of the sites, but the team worked extremely well together and in our first serious operation on this scale we have put together an excellent score." With 12,887 QSOs during the 24-hour contest period and a total of 448 multipliers, the claimed score is 17,074,624 points. "It was evident from the combined log that a lot of Gs were hunting GB5HQ from band to band, and awards manager G3LZQ will be kept busy for the next few months. At least a dozen people managed a QSO on all 12 'band-mode slots', and qualified for the Platinum award," Dave said.

Many thanks for all the QSOs, from the team of G3AB G3LZQ G3SJJ G3SXW G3TKF G3TXF G3WVG G3XSV G4AXX G4BAH G4BJM G4BUO G4BWP G4BYG

G4EAG G4FKA G4FRE G4JVJ G4KIU G4KNO G4OBK G4PIQ G4TSH G4VXE G0IVZ G0MTN G5LP GM3WOJ GM4FAM GM0GAV GW5NF MOBEW M0CMK M0MAT and M3TAY. Further information and pictures of GB5HQ are at www.gb5hq.com

TWO PRESIDENTS FOR BANGOR CLUB

As announced last month, the RSGB President for 2004 - 05 will be Jeff Smith, M10AEX. Jeff is a member of the Bangor & DARS and the club is claiming that it will become the only club in the UK to have produced two RSGB Presidents: Terry Barnes, G13USS, and now Jeff... unless, of course, anyone else knows differently?

AMSAT AWARD FOR GB4FUN PRESENTATION

The AMSAT-UK 'Best New Speaker Prize' was awarded to Carlos Eavis, G0AKI, the RSGB GB4FUN Project Coordinator, following a presentation to the 18th AMSAT-UK Colloquium. The colloquium took place at the University of Surrey over the weekend of 25 - 27 July. The GB4FUN vehicle is fully-equipped for satellite communication and Carlos described how GB4FUN is being used to demonstrate amateur radio to schools and colleges throughout the country. The certificate presented to Carlos was signed by Prof Sir Martin Sweeting KB, G3YJO, Chairman of AMSAT-UK.

Carlos Eavis, GOAKI, with the AMSAT-UK 'Best New Speaker' certificate.

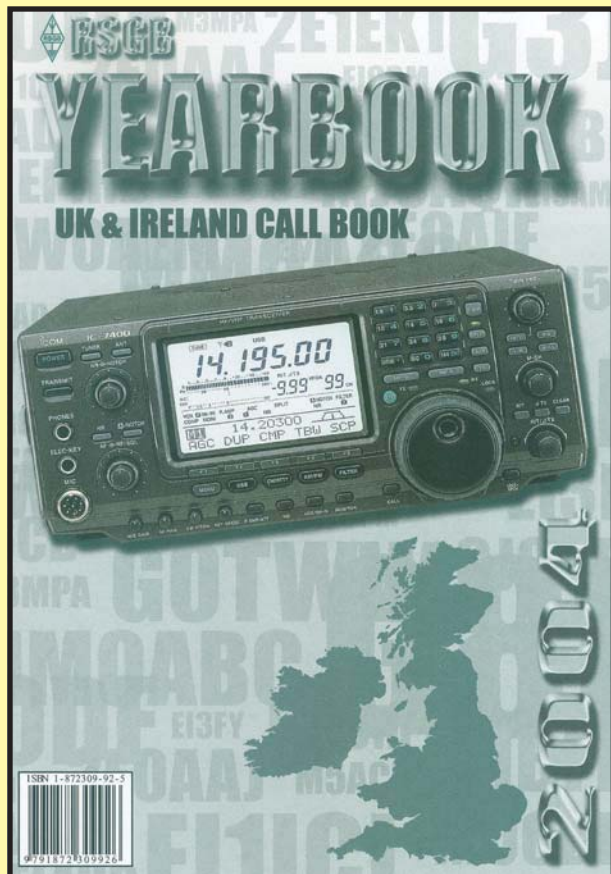


NEW

RSGB

**Available at
the Leicester
Show**

Yearbook 2004



Note: This book is launched at the Leicester Amateur Radio Show on the 19th-20th September 2003 (Advance orders are taken from 1st September 2003)

Did you know?

- Since Jan 2002 there have been over 6000 new M3 callsigns added to the Yearbook
- In Britain households move on average once every ten years

This could mean that if your Yearbook is over 2 years old it could be as much as 30% missing or inaccurate

Edited by Steve White, G3ZVW

The 2004 edition of the *RSGB Yearbook* is bigger than ever, with more pages in the Information section, more pages in the callsign listings section and more colour pages. Every page has been reviewed and updated from last year. The *Yearbook* reflects the current state of the hobby, with pages devoted to contesting, awards, satellites and propagation. New for the 2004 edition are pages on;

- Abbreviations & Codes,
- International Marconi Day
- RAYNET
- IOTA Honour Roll & Annual Listing.

More space has been allocated to trophies and awards, with more colour photos of the winners. The pages on repeaters have a new look, with coverage maps in colour of individual channels. Thanks to an increase in the number of amateur radio licences, the callsign listing section is bigger than ever. Additionally there is the callsign listing for the Irish Republic, for short wave listeners and short contest callsigns, plus surname and postcode listings. Plus the mass of information you have come to expect, and the most accurate and comprehensive UK and Eire callsign listings.

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- 300 pages of call listings of UK and EI calls
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- 164-page information section
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- Prefix guide & countries checklist

All-in-all it adds up to a reference book that no radio amateur should be without. Everything you need at your fingertips, and with 472 pages excellent value.

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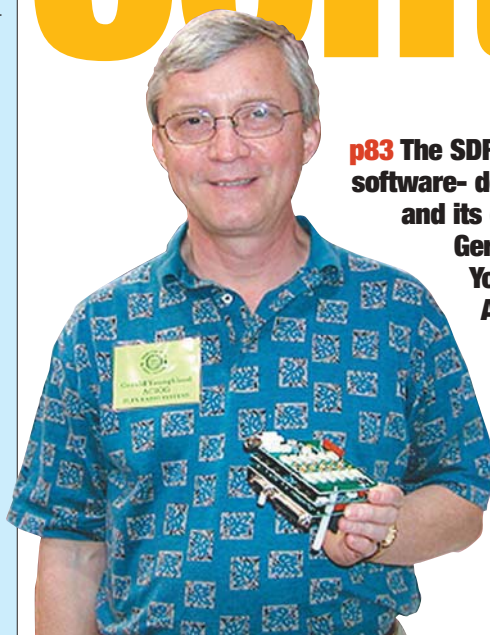
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Astronaut Edward Lu Talks to Schools in Space Station Contacts

UK Schools Contact ISS



Lucy, one of the students at Soar Valley College, asks her question to Ed.

In two separate events, astronaut Ed Lu, KC5WKJ, recently conducted contacts with two UK

schools using the International Space Station callsign NA1SS. On 6 August, pupils of Neston

Primary School in Wiltshire squeezed in 20 questions in the 10 minutes the ISS was above the horizon. Charles Riley, G4JQX, a parent of one of the children participating in the event, held the contact as the children asked their questions in front of an audience of over 200. There were also dozens of reporters and camera crews and a two-minute piece was broadcast on BBC1's *Newsround* the following day. Several regional TV and radio news broadcasts carried the story too, with one radio programme broadcasting the entire contact. Yaesu (UK) generously loaned a G-5500 rotator to allow the directional antennas to track the ISS. GB4FUN was in attendance and created an enormous amount of interest from the public.

Two days later, 13 students

aged 11 to 13 from Soar Valley College in Leicester had the opportunity to ask Ed their questions too. Derek Hatton, G4GWI, a teacher at Soar Valley College, organised the contact using the school's club callsign MOSVC. Ed gave some quite detailed answers, much appreciated by the assembled audience of students, parents and teachers. This event was also covered by the local press.

Signals from NA1SS on 145.800MHz FM were excellent, even on simple equipment, as the ISS passed almost directly overhead.

AMSAT-UK's ARISS delegate, Howard Long, G6LVB, has provided pictures, audio and video on his website at www.g6lvb.com/neston and www.g6lvb.com/svc

IEE Requests Views on Powerline Communication

The Institution of Electrical Engineers is asking its members for their views on PLT in the run-up to the formulation of European Standards that will control the spurious radio emissions from combined power / data networks. PLT is seen as a serious threat to amateur radio, and readers

who are also members of the IEE should go immediately to www.iee.org/Policy/Submissions/current.cfm and find the Power Line Telecommunications Consultation Briefing Paper and its associated question list. Comments must be made to the Institution by **2 September**.

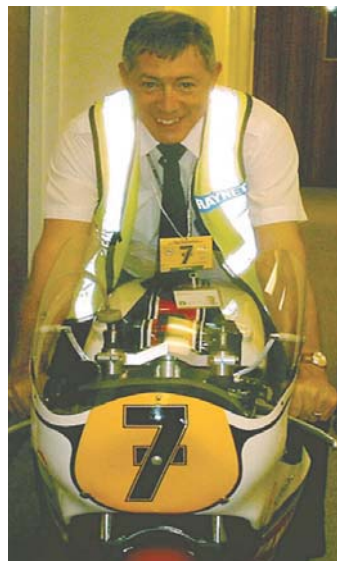
The Sheene Run

As a tribute to Barry Sheene, who died earlier this year at the age of 53, the Auto Cycle Union (ACU) based in Rugby, organised the 'Sheene Run' (www.thesheenerun.com) from London to Rugby on 6 July. Warwickshire Police asked Raynet to provide communications for marshal points and potential bottlenecks on the route and Coventry Raynet Group (www.raynet-coventry.net) was given the task. A total of 20 operators were given an information pack containing operational details, log sheets and other items. 2m and 70cm were used and it was found that UHF gave better coverage in the built-up area. One Raynet operator was an experienced biker and stayed with the Chief Executive of the

ACU on his own bike, proving to be a very useful asset to the operation. The event went well and without problems.

Rugby town centre was closed off all day except for motor bikes. About 8000 people attended from all over the UK in a carnival atmosphere. Some of Barry's own racing bikes as well as around 100 Harley Davidsons paraded through the town.

The organiser told Raynet afterwards that he was very grateful for the communications and added that if Raynet is not involved next year, the event won't be run! Thanks go to all the operators but in particular Madeley Smith, G8KVVU, and David Green, MOHPV, for their personnel management and the provision of back-up equipment.



The Raynet Rapid Response Vehicle? No, it's one of Barry Sheene's bikes outside the Raynet comms centre on the Sheene Run.

Welcome to HF for Former Class Bs

There is no longer a distinction between Class A and Class B amateurs. As is well known by now, the Radio-communications Agency published a Gazette Notice on 25 July which effectively brought to an end the differentiation between Class A and B amateurs. Many former Class B amateurs – both Full and Intermediate licensees – took advantage of the new regulations and started to operate on the HF bands for the first time as soon as the permission was granted. There are now simply three types of licence in the UK: Foundation, Intermediate and Full.

Other countries are following suit and at the time of going to press Switzerland, Belgium and Germany had announced that they too had dropped the Morse requirement.

Amateur Radio Courses this Autumn

Region 3, North West

Foundation, Intermediate and Full licence courses are run regularly at Manchester Wireless Society, G5MS. Details from Ian, MOIPR, tel: 0161 288 7301; e-mail: secretary@g5ms.com or see www.g5ms.com

Region 4, North East

Sheffield Amateur Radio Club (First floor, Club 197, 197 Brook Hill, Sheffield S3 7HG) offers Foundation and Intermediate courses (Intermediate exam subject to receiving satellite examination centre status) every Monday from 7.30pm. Details from Tony, G1TKX, at the club or e-mail: g1tkx@thers-gb.net

Region 5, West Midlands

Hillcrest Amateur Radio Society intends to run a Foundation course starting 18 October 2003 at Hillcrest School, Netherton, near Dudley. Further details from Stuart Viney, MOSJV, tel: 01384 232457; e-mail: m0sjvs-tuurt@supanet.com

City College Coventry, Tile Hill Centre, Tile Hill Lane, Coventry, will be running Foundation, Intermediate, Full Licence, Morse (5 & 12WPM) and construction courses from September. Details from tutor Michael Dixon, G4GHJ, e-mail: m.dixon@staff.covcollege.ac.uk or call the course on 02476 791138.

Region 8, Northern Ireland

The enrolment date for courses at the Carrickfergus Amateur Radio Group is 3 September at Downshire School. The next Intermediate course starts on 15 September and a Foundation Course on 16 September. December is the last opportunity to sit the C&G RAE (exam only), register by 3 September. Contact John at gi3yrl@qsl.net for further details.

Region 9, London & Thames Valley

RAE classes leading to the new examination will be held at Newstead Wood School for Girls, Avebury Road, Orpington, commencing Monday 15 September, 7.30-9.30pm.

Enrolment, Bromley Adult Education College, The Widmore Centre, Bromley BR1 2SQ, tel: 020 8460 0020. Arrangements can be made with local radio clubs to obtain the Foundation and Intermediate examinations prior to the RAE exam. It is not essential to have these prior to enrolment.

The Stevenage & DARS holds frequent Foundation courses. There's usually a waiting list so please visit www.sadars.com and choose the 'Foundation' link, which will automatically forward your request to the next Lead Instructor.

Region 11, South West & Channel Islands

North Bristol ARC is preparing candidates for the last C&G RAE exam in December 2003. It will also run a Foundation course in September. The contact for both is Dick Elford, GOXAY, tel: 01454-218362, e-mail: g0xay@aol.com

Region 12, East & East Anglia

Phoenix Radio Club (www.phoenixradio-club.org.uk) based in Gillingham, Kent, offers Foundation and Intermediate courses and plans to start a Full licence course in October. Details from Linda or Brian Reay, e-mail: brian.reay@bigfoot.com

Maidstone Amateur Radio Society offers RAE training. Details at www.g3trf.org

Chelmsford ARS holds Foundation or Intermediate courses every Thursday. The last C&G RAE will be held at the Chelmsford Exam Centre in December. Details from Clive Ward, MOSIX, tel: 01245 224577; e-mail: training@g0mwrt.org.uk or check www.g0mwrt.org.uk

W&S's Hawaiian Birthday Party

Waters & Stanton celebrated their 30th anniversary in business with a Hawaiian themed evening in Rochford, Essex, in July. The tropical theme extended to the weather, with lightning flashes in the late evening sky following a hot sultry day. A competition for the best Hawaiian outfit was won by W&S Sales Director Mark Francis. Bill, MMOHAY and Betty Hay, from the W&S shop Jaycee Electronics made the long journey from Glenrothes to Essex to join in the celebrations. The photos show that W&S know how to let down their hair sometimes and the RadCom 'spy' at the event says that it really got going in the early hours of the morning!

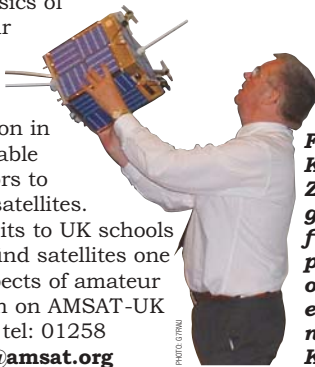


W&S Directors Mark Francis, G0GBY; Peter Waters, G3OJV; and Jeff Stanton, M3JJS, in tropical gear.

AMSAT-UK Colloquium

In July AMSAT-UK (www.uk.amsat.org) held its 18th annual Colloquium at the University of Surrey in Guildford. Amateurs travelled from across Europe and as far away as North America, Asia and the Pacific to attend what proved to be a fascinating event. There was the live firing of a resistojet satellite propulsion system, spectacular and very noisy, and Fred Kennedy, ZL1BYP, brought along a full-size model of the new KiwiSAT being constructed in New Zealand. As in previous years special sessions were run for beginners to teach the basics of getting started on amateur satellites.

Last year, AMSAT-UK installed a state-of-the-art amateur satellite station in GB4FUN and it was available during the event for visitors to work the many amateur satellites. GB4FUN makes many visits to UK schools and the children always find satellites one of the most appealing aspects of amateur radio. Further information on AMSAT-UK from Jim Heck, G3WGM, tel: 01258 453959, e-mail: g3wgm@amsat.org



Fred Kennedy, ZL1BYP, gave a first class presentation on the exciting new KiwiSAT.

Liz Cruise, wife of Steve, MOCUT, with the crystal set she built following inspiration derived from reading the Amateur Radio: the First 100 Years book which she bought for Steve at the Epsom Radio Fair. Liz says that now she has mastered coil winding and soldering she would like to tackle a more complex construction project!



A New Look on Life

Bethany, aged 9, and her brother Peter, now aged 7, passed their Foundation Amateur radio courses earlier this year. They are both now keen operators and take every opportunity they can to take over granddad's radio shack. Bethany is partially sighted, and Peter is blind. Recently they have been given two loan radios from RAIBC (Radio Amateur Invalid and Blind Club), which has given them a completely new look on life: the radios have a voice synthesiser to tell them what frequency they are using, making them very independent and able to use the station without having to rely on granddad.

Their grandfather, Pete, MOPCA, says, "Having been given the use of these radios by the RAIBC we decided that we should put them to good use. It was decided that we would get sponsors from 'Transmission 2003', a sponsored event in aid of the British Wireless for the Blind Fund, a charity aiming to keep blind people in touch with the world. Transmission 2003 is held on **20/21 September** this year, so listen out for Bethany, M3CUP; Pete jnr, M3PCA; and Pete snr, MOPCA. It doesn't cost you anything, but for every one that has a QSO with each of us increases the sponsorship that we get, and you get a special QSL card."

NEWS BRIEFS

- A new archive of radio research records has been made available by the Rutherford Appleton Lab. The archive is a collection of records chronicling the pioneering research work carried out at Ditton Park, Slough, from 1924 to 1979. The Radio Research Station was home to the development of radar by Sir Robert Watson-Watt and to studies of the ionosphere by Sir Edward Appleton. A detailed history of radio research at the site and on-line search catalogue of the records held in the archive is at www.dittonpark-archive.rl.ac.uk
- A stamp has been issued by the island of Pabay to record the first amateur transmissions there on 5MHz. The equipment used for the transmission was an IC-706MKIIG with extended range and a dipole 10ft high, ensuring NVIS propagation. Details of this and other Pabay amateur radio stamps can be found at www.pabay.org
- GB2RAF at the RAF Air Defence Radar Museum, RAF Neatishead, Norfolk will be operational on **27 September** for a 'Friends of the Museum' day (normally GB2RAF is operational every second Saturday of the month). Further details from Terry, G4PSH, tel: 01692 582064.
- On **27/28 September** the DARC Wuerttemberg district is organising an LF Activity Day. DK0UH will transmit on 136.5kHz CW and on 137.7kHz QRSS-CW (grss3) in the evening. Talkback will be on 7021kHz.
- Radio amateurs in Letchworth will celebrate the centenary of the founding of the world's first garden city by Ebenezer Howard in 1903. GB0LGC will be active from 80m to 70cm on **6 / 7 September** and will especially be looking for stations in twin towns Chagny (F), Vissen (DL) and Kristiansand (LA).

RSGB 'Party in

26/27 July 2003

The RSGB 'Party in the Park', organised to commemorate the 90th anniversary of the foundation of the Society, took place over the weekend of 26/27 July.

Over 30 of the RSGB's 57 Districts took part, most of them taking advantage of the 'Special (Special)' callsign that the RA had allocated for the event – GB90RSGB – with an on-the-air presence and together making many thousands of contacts. Despite the long, hot summer we have enjoyed (or endured?) this year, the weather was distinctly variable during the Party in the Park weekend, with the Hereford Amateur Radio Society (GB90RSGB/53) being typical of many in saying, "The weather was not great but spirits were high" and the Weston-Super-Mare group reporting "the weather on Saturday was a washout". The Solihull Amateur Radio Society (GB90RSGB/52), however, reported "warm and generally sunny weather".

NORTH, SOUTH, EAST AND WEST

GB90RSGB/32 was on the air from Anglezarke Viewpoint in Lancashire. DRRM Sean Flanagan, M1SMF, said: "A variety of aerials was used at the site including a kite antenna some 100ft high. Thanks go to the Chorley ARS for putting on the station, all the operators including 10-year old Matthew, M3BAB, and all who helped make the event the success it was. A smashing day – we must all do it again soon."

The Whitton Amateur Radio Group was the only club in London with a Party in the Park event. They really went to town, with no fewer than five stations on the air as GB90RSGB/91. They made over 300 QSOs on one day and said, "Our request for the 100th anniversary is a shorter callsign!"

One of the more unusual celebrations for the 90th anniversary weekend was a peal of bells rung by the Essex Association of Change Ringers at All Saints Church, Hutton. RSGB Board Member Robin Page-Jones, G3JWI, and his wife were among the bell ringers who rang a quarter peal (Plain Bob Doubles). Robin said, "We ring a quarter peal about once a month. It is usual to dedicate it to something such as a birthday, anniversary, a church

festival or a national event or whatever. This time I asked for it to be dedicated to the 90th Birthday of the RSGB."

In the West Country, two stations were set up near Weston-Super-Mare. GB90RSGB/113 was put on by the G6PZ Contest Group, with the station working in "full contest mode" making 940 contacts on CW and SSB, including several QSOs with the USA on 160m. Meanwhile, GB90RSGB/011 was activated by the Weston-super-Mare Radio Society and included a portable station for the public to "have a go".

ALL OVER THE LAND

The event in North Wales took place in Eirias Park, Colwyn Bay, and was organised by the North Wales Radio Society in conjunction with RRM6 Liz Cabban, GWOETU, and the Wrexham ARS. Other clubs were invited and the organisers commented on how good it was to see so many members of the Dragon ARS from Anglesey (Ynys Môn) and the Denbighshire and Vale of Clwyd Raynet Group over the weekend.

The event organised in Aberystwyth was appropriately called 'Party on the Hill' and took place on top of Constitution Hill, a local landmark in the town which also houses the world's largest *camera obscura*. DRRM72 Quentin Cruse, GW3BV, reports: "Members of the public began arriving shortly after 10.00am. A steady stream became a torrent of visitors and interested parties. Many questions were asked by members of the public and demonstrations of amateur radio in action were viewed with interest. Due to the level of interest shown by members of the public it is hoped that here in Aberystwyth we will have our first Foundation course up and running very soon." He adds that the RSGB ale was sampled "as a quality control issue, declared more than fit for human consumption and then distributed at the discretion of GW7AGG and GW3BV!"

Paul Goodhall, M3JFM (DRRM 101), assisted by his son Peter, M3PHP, organised the 'Fun in the Park' event at the Youlbury International Scout camp site in Oxfordshire (GB90RSGB/101). Paul

made a huge effort to organise an interesting event, with displays of old radio equipment, RSGB publications from the 1940s to the present day, and stands for the Oxford and District Amateur Radio Society, WACRAL, ISWL, the Harwell ARS and GB4YOU, the exhibition station at the Scout camp. Paul was interviewed by David and Debra Rixon, the Grindlewald Productions team, who made the *Secret Wireless War* film. The site was also visited by the 1st Wargrave Cub Scouts, who were very excited and keen to learn about amateur radio. Paul reports that

when the Cub Scouts visited the radio shack, "it was a different world – their faces lit up and David and Debra were busy filming them."

The West Midlands (Region 5) was probably the most 'radio active' region in the country over the Party in the Park weekend, with no fewer than eight parties taking place in the four Districts that make up Region 5. The St Leonards ARS from Stafford went to lofty Stafford Castle, 1200ft ASL, overlooking much of



A skilful piece of homebrew on display at Hereford Party in the Park.



the Park'

Staffordshire, Shropshire and the West Midlands, to operate GB90RSGB/51. The castle was also celebrating 25 years of archeological excavation on the site and both events were promoted on local radio. There was a constant stream of visitors, amateurs and public alike throughout the day, and the younger visitors were thrilled to send greetings messages to stations being worked. The Rugby ATS operated GB90RSGB/54 from the historic Rugby LF transmitting station building and held a BBQ and 'fun evening'. RRM5 Roy Clarke, G8AYD, said "On behalf of the regional team, I would like to thank all the clubs, and their unsung helpers for their sterling efforts in making the West Midlands birthday weekend celebrations the success they were."

The GB90RSGB/102 event held in Chippenham, Wiltshire, raised £108 in sponsorship for the local charity Wiltshire Wildlife Trust (www.wiltshirewildlife.org), based in Devizes. Ian Carter, GOGRI, the DRRM for District 102, thanks all those who made, or later sent in, a contribution.

NORTHERN LIGHTS

The northernmost Party in the Park was certainly that of the Caithness Amateur Radio Society, which combined it with a previously-planned special event station at the John O'Groats 'Harbour Day' celebrations. They operated as GB90RSGB/21 but report that an auro-



"Just listen to that pile-up!"

ra took place on the Saturday evening leading to band conditions becoming "totally flat" on the Sunday morning. Nevertheless, a contact was made with M3CLQ at Land's End, which went down very well with the crowd.

The GB90RSGB/44 callsign was shared by members of the Mexborough ARS and Finningley ARS on the Saturday and Sunday respectively. It was the final part of Finningley ARS's Foundation course and students were really thrown in at the deep end, taking their HF assessment while operating GB90RSGB/44! Several members of the public were recruited for the club's next Foundation course. As Royce Hunt, MORHI, said, "The Party in the Park was a great success and we can't wait until the next time! T-minus 10 years until GB100RSGB? Happy birthday RSGB." ♦



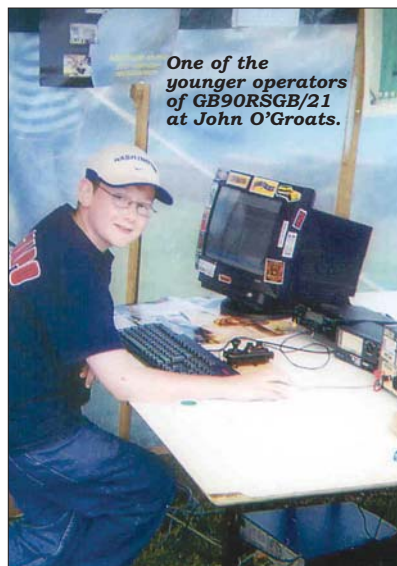
Members of the Moorlands & DARS model the snazzy RSGB Party in the Park T-shirts. Don't give up your day jobs, lads.



Top BBQ chef at the District 34 (Cheshire & Merseyside) party.



Don't drink it all at once. The RSGB ale goes down well at the Moorlands & DARS.



One of the younger operators of GB90RSGB/21 at John O'Groats.



"Food's up." The hard-working chef at the Falkirk ARS party.

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Club and

Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will only be included if space permits. Basic, unchanged details about RSGB-affiliated clubs are published annually in the RSGB Yearbook.

Region 1: Scotland West & Western Isles

WEST OF SCOTLAND ARS
12, Short waves Seal Island, GMOWRR. A M Fraser, GM3AXX, 01560 482720.

Region 2: Scotland East & the Highlands

COCKENZIE & PORT SETON ARC
5, Normal club night. 19, Trip to Leicester show. 26, Second 144MHz DF hunt. Bob, GM4UYZ, 01875 811723.

Region 3: North West

CHORLEY & DARS
17, Slow Scan TV, Tony, M1EXT. Sean, M1SMF, sean1226@hotmail.com
FYLDE ARS
4, Members dinner. 18, Construction contest. Ken, G3RFH, 01253 823957 or g3rfh@fsmail.net
ROSSENDALE ARS
3, Open night to promote amateur radio and investigate possibility of running Foundation course. Venue is Community Centre, Adelaide St, Crawshawbooth. Ken, G1RWK, 07899 084 331.
SOUTH MANCHESTER R & CC
5, Analogue test instruments, Ged, G8RSI. 12, 'A Pictorial History of SMRCC'. 19, The KW Vespa, Ron, G3SVW. Ed, 0161 969 1964.
THORNTON CLEVELAYS ARS
1, On air. 8, Surprise talk by Kevin, G0LRK. 15, 'My amateur radio', Fred, G4FXG. 22, Construction contest. 29, Tech Talk. Jack, G4BFH, jack@jdud-dington.fsnet.co.uk
WARRINGTON ARC
2, PW, Rob Mannion. 16, 'A New Digital Transceiver Design', George, G3OGQ & Dave, G8KBB. 23, Using Excel. Ian, M0BXP. 30, Progress in Constructing CDG2000 Transceiver, Cliff, M0MRC. John, G0RPG, 01925 762722.

Region 4: North East

GOOLE R & ES
3, Pub night. 10, Discussion night. 17, Visit to antenna site. 24, AGM. Richard, G0GLZ, 07867 862169.
GRIMSBY ARS
4, HF on air. 11, RoPoCo contest on 2m. 18, Quiz night. Brian, G4DXB, 01472 231383.
HALIFAX & DARS
16, AGM. Tom, M0TKA, 01484 715079.
HORNSEA ARC
3, Field day preparation. 6, 7, SSB Field Day. 17, 'Foxhunt', antenna farm preparation. 19 to 28 Sep: 'Antenna Farm' at Bewholme. 24, Activity evening. Richard, G4YTV, 01964 562498.
RIPON & DARS
27, 28, GB2MSF Masham Sheep Fair. Andy, G0HUC, 01423 507623, andy@aicuk.demon.co.uk
SHEFFIELD ARC
1, Club night. 8, VHF radio. 15, Video evening. 22, HF radio. 29, Club night. Nick, G4FAL, 0114 2552893.
SOUTH YORKS RG
2, 13th Metrodome Hamfest. Ernie, G4LUE, 01226 716339.
WAKEFIELD & DRS
2, HF contest planning. 9, Contest debrief. 16, Fish & chip supper at Wetherby Whaler. 23, On air. 30, Talk by Gerald, G3SDY. Rick, G4BLT, 01924-255 515, www.wdrs.org.uk

Region 5: West Midlands

BROMSGROVE & DARC
2, Foundation and Intermediate courses start. Chris, M0BQE, 01095 776 869.
BROMSGROVE ARS
2, Foundation/Intermediate courses. 5, Team QSO competitions. 9, Junk sale. 12, 19, Team QSO competitions. 23, On air. 26, Team QSO competitions. Angus, G8DEC, 01527 875573.

CHELTENHAM ARA

5, WRC-03 and the new UK licensing structure, Roy Clarke, G8AYD. Ivan, G4BGW, 01452 731 956, ivan@g4bgw.freeseve.co.uk
COVENTRY ARS
12, On air, Novice class, CW practice. 19, 2m DF hunt. 26, On air, Novice class, CW practice. John, G8SEQ, 024 7627 3190 johng8seq@ntlworld.com
GLOUCESTER AR & ES
1, AGM. 8, On air, HF, workshop. 15, New rig demonstration. 22, 29, On air, HF, workshop. Tony, 01452 618930 office hours.
HEREFORD ARS
5, 'Kite Aerials', Dave, G4EYS. 14, Sunday visit to Fleet Air Museum, Yeovilton. 19, Video: 'Beyond Bletchley Park', Dave, G3OGW. Keith, G0RQF, 01432 870 224.
KIDDERMINSTER & DARS
2, AGM. Tony, G1OZB, 01299 400172.
MID-WARWICKSHIRE ARS
9, Computer topics, Dave G8UIO. 23, 'Homebrew' evening. Bernard, M1AUK, 01926 420913.
SALOP ARS
2, Foundation or Intermediate course TBC. 4, Contest preparation. John, G0GTN, 01743 249 943.
TELFORD & DARS
3, Open evening, on air. 10, Using test equipment. 17, Aerial construction competition. 24, Talk TBC. Mike, G3JKX, 01952 299 677.

Region 6: North Wales

CONWY VALLEY ARC
3, 'New types licences/callsigns. Wynne, GW6PMC, 01745 855068.
WREXHAM & DARS
2, Datamodes demo, Mark MW1/MW3MDH, & John, MW1/MW3VCD. 16, Dayton HamVention video diary, Stephen, MW1STE. Mark, MW1MDH/MW3MDH, www.qsl.net/wars

Region 7: South Wales

ABERYSTWYTH & DARS
6, Across Wales Walk, Bryan, GW1XOT. 9, AGM. 11, Visit to Powergen Hydro Scheme, Ray, GW7AGG. 25, Club Net S21, call on S20, GW7OZP. Ray, GW7AGG.

Region 8: Northern Ireland

No club details received.

Region 9: London & Thames Valley

AYLESBURY VALE RS
10, Morse tuition, discussion and on air. Roger, G3MEH, 01442 826651, roger@g3meh.fsnet.co.uk
BROMLEY & DARS
16, Visual Basic programming. Alan, G0TLK, 0208 777 0420.
COULSDON ARS
8, RSGB video. Steve, G7SYO, 01737 354271.
CRAY VALLEY RS
4, Table sale. 18, D68C video. 20, 21, 'Transmission 2003' (BWBF). 28, HF training. Bob, BRS32525, 020 8265 7735 after 8pm & weekends.
CRYSTAL PALACE R & EC
5, Club projects, technical discussions. 19, WWII V2 rockets, John Becklake. Bob, G3OOU, 01737 552170 or Victor, G1PKS, 020 86532946.
ECHELFORD ARS
11, 'Empire of the Air' video, Ed Gowler. 25, 'Simple Laser Communications', David, G0MRF. Robin, G3TDR, 01784 456513.
MAIDENHEAD & DARC
4, VHF contesting for beginners, Roger Piper, G3MEH. 16, Simple Laser Communications, Dave, G0MRF, John, G3TWG, 01628 525275.
RS OF HARROW
5, TBA. 12, Informal. 19, Newcomers' programme. 26, Informal. Jim, G0AOT, 01895 476 933 or 020 7278 6421.
READING & DARC
11, Construction evening, Robin, G4IWS. Pete, G8FRC, 0118 969 5697.
SILVERTHORN RC
5, First Meeting of autumn term. 12, Introduction to VHF Contesting. 19, Junk sale. David, G0KHC, 020 8504 2831.
STEVENAGE & DARS
2, 9, Members' discussion. 16,

Regional

Operating M3 tuition. 23, Members' discussion. 30, Video. info@sadars.org
SURREY RCC
1, 'I-Link', Terry, G4CDY. 6, Club trip to IOW on Spectrum II. Ray, G4FFY, 020 8644 7589.
SUTTON & CHEAM RS
18, 'Alternative Energy Sources', Martin Berry. John, G0BWV, 020 8644 9945.

Region 10: South & South East

ANDOVER RAC
2, RSGB video evening. 16, PSU project, Jim, G4NWJ. Terry, G8ALR, 01980 629346.
BASINGSTOKE ARC
1, Microwaves, Noel Matthews, G8GTZ. 27, 28, New Forest 'foxhunt' weekend. Peter, M1DGQ, 0118 983 6545.
CHIPPENHAM & DARC
6, 7, SSB Field Day. Andrew, G4GWR, andrew@scott-green.fsnet.co.uk
FAREHAM & DARS
3, On air. 10, Junk sale. 17, 24, Autumn Club Project. Steve, G7HEP, 01329 663673.
HASTINGS E & RC
17, 'Bring Your Thing', Peter Firmin. R C Gornall, G7DME, 01424 444466.
HORNDEN & DARC
2, 'Getting involved in Maritime Archaeology', Mark Beattie-Edwards. 23, 'Journey to the Stars', Robin Gorman. Stuart, G0FYX, 023 9247 2846.
ITCHEN VALLEY RC
12, Security within various premises. 26, Quiz. Sheila, G0VNI, 023 80813827 sheila.williams@ivarc.org.uk
SOUTHDOWN ARS
1, The Bluebell railway, D Jones. John, G3DQY, 01424 424319.
SWINDON & DARC
4, 144MHz Trophy preparation. 11, 'Buyers Guide to Digital Radio and TV Broadcasting', Mike, G7TAF. 25, Members' surplus equipment sale. Den, M0ACM, 01793 822 705.
TROWBRIDGE & DARC
3, Building the Elecraft K2 transceiver kit. Ian, G0GRI, 01225 864 698 evenings/week-ends.
WORTHING & DARC
3, Communications for 'Holiday on Ice', G3GZT. 10, Technical

Writing for a Living. 17, Current radio topics discussion. 24, Construction contest. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

APPLEDORE & DARC
15, 'Homebrew Morse and Me', Mike Hewitt, G4NCU. Brian, M0BRB, brian.jewell@ic24.net
BOURNEMOUTH RS
5, Dorset Air Ambulance, John Hoyle. Chris, M5AGG, 01202 893126.
CITY OF BRISTOL RSGB GROUP
29, Wine & Cheese Party. Clive, G4NAO, 01275 851724.
CORNISH RAC
4, Potted talks. 8, Computer section: History of Computing. John G4LJY, 01872 863849.
POLDHU ARC
9, Talk about recent construction projects. Keith, G0WYS, 01326 574441.
SOUTH BRISTOL ARC
3, Computer clinic. 10, Lundy expedition photographic report. 17, Collecting vintage cameras. 24, On air. Len, G4RZY, 01275 834282.
WEST SOMERSET ARC
2, Bring & buy/junk sale. Jean, G0SZO, 01984 633060.

Region 12: East & East Anglia

CAMBRIDGE & DARC
5, Preparation for Field Day. 12, Field Day debrief, G6KWA. 19, GPS, Jenny Bailey. 26, Video. Ron, G3KBR, 01223 501712.
CHELMSFORD ARS
2, Amateur TV, Paul Prior, G8IXC. David, M0BQC, 01245 602838.
FELIXSTOWE & DARS
7, Club field day & balloons, Steve, M1ACB. 22, Talk on 5MHz. Paul, G4YQC, paul.whiting@bt.com
HARWICH ARIG
10, Talk: 'The work of the RA and other matters', Gus, G3ZEZ. Eugene, G4FTP, 01206 826633
NORFOLK ARC
3, Role of the Merchant Navy Radio Officer, Malcolm, G3PDH. 10, Informal and CW instruction. 17, Aerials for the small garden, Alf, G3PZX; Doug, G3HUL; Stuart, G3XYO. 24,

Informal and CW instruction. Reg, G0VDO, 01603 429269.
PHOENIX RC
2, 9, 16, 23, 30, Intermediate Licence Course lectures. Linda, G6MXR, secretary@phoenixradioclub.org.uk

Region 13: East Midlands

DERBY & DISTRICT ARS
2, Junk sale. Martin, G3SZJ, 01332 556875.
EAGLE RADIO GROUP
9, 'The RSGB and its Aims for the Future', Bryn, G4DEZ, RRM Region 13. Terry, G0SWS, 01507 478590.
LINCOLN SW CLUB
3, G5FZ on air. 13, 14, ATV contest. 17, TBA. 20, 21, Wireless for Blind weekend. 24, TBA. John, G1TSL, 01522 793751.
LOUGHBOROUGH & DARC
2, Vintage computer night. 9,

Bob's photo quiz. 16, Entertainment in Loughborough, Pt 2, Ian G8SNF. 23, On air. 30, Talk: cubed ferrite etc, Brian G8BUB. Chris, G1ETZ, 01509 504319.
SHEFFORD & DARS
4, Return from summer break. 11, 'The Father of Wireless', Roy Rodwell. 18, 'The RSGB: What's Going On', RSGB General Manager, G0TWW. Derek, G4JLP, 01462 851722.
SOUTH NORMANTON ARC
1, Talk on DFing ('foxhunting'), Dave Bullock & John Wood. 7, Amateur radio boot sale. 8, Construction: build 2m HB9CV antenna. 15, Junk sale. 22, On foot 2m 'foxhunt', pie & peas supper. 29, Talk: electronic components, Russ, G0OKD. Russell or Mike, 01949 876523.



More new Foundation Licensees outside the Stevenage & DARS club premises.

Stevenage Does it Again!

The Stevenage & DARS has just completed its fifth course since the outset of the Foundation Licence. This one was held over the weekend of 21/22 June, and there are now more than a half-century of club members with M3 callsigns. Once again the candidates were from a wide variety of backgrounds that should prove useful to the club. The total membership of SADARS now stands at 91. Thanks go to Robert Snary, G4OBE, for version 2 of his Foundation Licence Power Point presentation, which is available from Robert for all course instructors upon request.

News

Speedy Progress to Full RAE

'Speed cop' Martin, M3UKM (a motorway patrol officer), passed his Foundation Licence in March 2003 and in June went on to take and pass the RAE. Martin, who had had no knowledge of amateur radio, found out about it while visiting a friend who was an amateur. He sat the foundation course at the Manchester Wireless Society, G5MS, and passed with a 100% mark. After a week and with a little coaxing he agreed to sit the RAE. A lot of intense studying later, he sat the exam and received his pass certificates at the G5MS members' BBQ in June.

New Club, New Name . . .

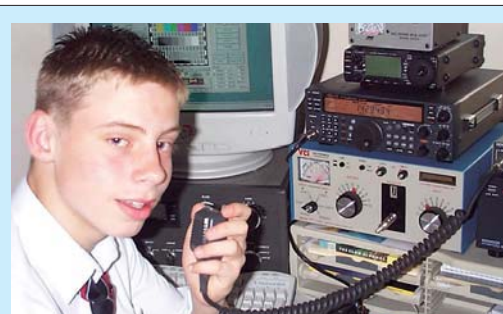
It is always good to report on the formation of a new amateur radio club. One such is the **Phoenix Radio Club**, which was formed in June this year in the **Gillingham** area of North Kent. The club was formed specifically to develop the skills of its members and the wider hobby and as such it offers Foundation, Intermediate, and Full licence courses under an experienced Lead Instructor. See www.phoenixradioclub.org.uk or contact Linda, G6MXR, at secretary@phoenixradioclub.org.uk

Generous Donation

The Eagle Radio Group was privileged to be chosen to receive the radio equipment of silent key Reg Wade, G3IRW, which was kindly donated by his widow. The equipment, which includes an FT-102 with matching ATU, Ten-Tec Corsair and Kenwood 2m transmitter, was used on air for special event station GBOERG at the Mablethorpe and District Show.



Alan, GORGN, and Alex, G1XWD, with the donated equipment at GBOERG.



Blair Ross, GMOWSG, in the 'shack' he shares with father Keith, GM4DAE.

Blair on the Air

No, not Tony, but 14-year old Blair Ross, who has gone from Foundation to Full Class A licensee in just a few months. Blair writes, "I first became interested in short-wave radio when I was about 10 years old. This was when I helped my dad, Keith Ross, GM4DAE, set up a Lowe HF-50 receiver and long wire antenna at an Albanian refugee centre in Springburn, Glasgow, in August 1999." He went on to take the **Mid-Lanark ARS's** Foundation course and became MM3WSG last November. Blair

says, "A holiday in Seattle over the Christmas and New Year period, when my dad took HF radio equipment with him, spurred my interest further and I decided to study for the May RAE." He received the RAE and Morse pass slips in the post on the same day and has now taken over his father's former callsign, GMOWSG. As well as his father, Blair thanks Dave, GM0TPI; Tom, GM3ZLC; Gordon, GM3ULP; Kenny, GM1MMK and Elvin, GM8BBA, for their help in getting him through the exams

Leicester Show Coach Trips

On **Friday 19 September** the Scunthorpe Steel ARC is running a coach from Scunthorpe to the Leicester Show [see pages 28 - 29 - Ed]. At the time of going to press there are still spare seats on the coach, and they are being offered to anyone in the Scunthorpe, Hull, Goole, Doncaster, Finningly, Gainsborough etc area. Anyone interested should contact Pete Batty, M3BAT, tel: 01724 848183. And the Swansea ARS has also organised a coach trip to the Leicester Show, on **Saturday 20 September**. For further details contact Roger, GW4HSH, tel: 01792 404422.

100% Pass Rate for First Intermediate Course

The Chelmsford Amateur Radio Society has been running Foundation courses continuously every Thursday evening since January 2002. On 28 July seven candidates sat the Intermediate Exam after the club's first Intermediate course and all passed.

Successful Intermediate course candidates and tutors at the Chelmsford ARS. The club is fortunate in having many members willing to give up much of their spare time to assist. These include GOIPU, G3PEM, MOSIX, G6JYB, M1FDE, M5AKA, G1EFL, G3CVI, 2E1GUA and the examinations officer, MOBQC.



NEWS IN BRIEF

THE QRZ AMATEUR Radio Group of Sussex meets in the grounds of Hertsmonceux Castle and Science Centre, Hailsham, East Sussex BN27 1RN. For details of meetings please contact Stuart, MOCHW, tel: 01435 863020; e-mail: qrz@jandc.demon.co.uk (the details of meeting days and times published in the 2004 RSGB Yearbook are incorrect).

APOLOGIES TO THE FYLDE ARS, the contact details of which have appeared incorrectly in previous issues. The hon sec of the club is Ken Randall, G3RFH, 'Seahawk', 13 North Promenade, Cleveleys, Lancs FY5 1DB; tel: 01253 823957; e-mail: g3rfh@fsmail.net

MAIDSTONE ARS has a new website at www.g3trf.org The site's 'Antenna Corner' has a whole range of antenna designs to cover most bands - give it a try!

THE WORKSOP ARS, G3RCW, now has a new secretary. She is Mrs Sharon Muggridge, Hodthorpe, Worksop, Notts S80 4UY; tel: 07944 422523.

MAXPAK (the Midlands AX25 Packet radio club) meetings are now being held at a new venue: the lounge of the Sir Robert Peel public house, in Bloxwich, West Midlands, on the first Monday of every month. Please look at www.maxpakgb.org.uk or contact Miles, G4GSB, tel: 01952 585447 for further details.

THE BRIGHTON RADIO CLUB is the new name of the former Brighton and District Amateur Radio Society and meets on the second and fourth Tuesday of each month at the Vallance Community Centre, Sackville Road, junction of Connaught Road, Hove at 7.30pm. Further details from the secretary, GORNS tel: 01273 699104.

THE CHESTER and District Radio Society meets every Tuesday except the second Tuesday of the month, at 8.00pm at The Burley Memorial Hall at Waverton, Chester, for talks, sales, bring and tell, and operating evenings. All welcome. Further details from hon sec Bruce Sutherland, MOCVP, e-mail: bfcsutherland@supanet.com

UNDERGROUND RADIO. The Bredhurst Receiving and Transmitting Society has been granted a permanent special event callsign, GB2FAC, which is activated most Sundays on VHF and HF from Fort Amherst, a structure built to defend Chatham Dockyard. A unique feature of the location is that the operations room is located in tunnels 30m underground and nearly 100m of feeder has to be used to reach the antennas on the surface.

Norfolk Schools Learn from GB4FUN

Back in May, GB4FUN visited Reepham High School and Hewett School in Norwich, as reported briefly in the July *RadCom* (page 15). We have since received a lengthy report from Allan Wright, G0KRU, the teacher who requested the visit. Unfortunately there isn't space to quote Allan in full, but we hope that this edited report gives a good idea of the enthusiasm of the students. Allan writes:

"It all started when the Hewett School and Reepham High Schools in Norfolk decided to have a 'Science fact and fiction week' in May, with space and radio communications as a key activity for the students. When GB4FUN came through the gates at the Hewett, it was clear that a lot of radio equipment had been cleverly fitted into the wagon and we could use it anywhere - no mains supply needed. This was good news and meant we could place the vehicle where students could have good access and we would have a minimum of interference from the myriad RF noises kicked out by school computers and networks. GB4FUN was to prove a real hit with our students over the days that followed. Let me tell you how it worked in practice and how amateur radio and its technology can be brought into the learning environment.

"Carlos Eavis, G0AKI, took us through the stages of the station set-up: assembling the antennas on the roof covering virtually all bands from 40m to 13cm using vertical, Yagi and dish antennas; setting up the satellite az/el rotator system using compass and spirit level; powering up the generator etc. Time, about an hour - but this improves with practice! By 10.00am the following day, we had set up the station at Reepham High School. How to introduce GB4FUN when

students are both excited and wary at the array of displays, lights, controls and electronic gizmos? In their brave new world, many youngsters have little experience and understanding of the core technology behind the everyday devices they use - and we have to make radio an exciting experience.

"Prepare *before* the event, including setting satellite up/down links. Explain the key components of the radio station. Link to the radio side of the 'convenient' cellphone you pull from your pocket. Switch on an HF rig: a quick twiddle and ongoing explanation of the different ways radio can be used to communicate. Tune in a few commercial stations on MW. Safety aspects: outboard antenna installation, electrical voltages and transmitted powers used (but don't mention "radiation"! A little computer control to show how a radio can be controlled with a laptop (did I forget to mention the superb Kenwood B2000 system in the station?)

"Then throw in the 'bait': let's see how many amateur stations we can get. Would someone like to tune in a few stations? Find out about call signs and start using a callbook. The geographers love this, and the wall chart helps. Let's talk to someone: calling and answering procedures. Get that first contact. Show them how it's done. Maybe one or two students will send a greeting: young women, despite rumours to the contrary, can be quite coy at first!

"This seems like a lot to cover, but this session can be done comfortably in about 15 - 30 minutes. The radio wagon can only take about 10 adult-sized people inside, so shifts may be required if you want to cover a large class of students.

"The day finished too soon at Reepham High School and we left a few sad faces to



Students at Hewett School take a break while assembling the GB4FUN antennas.

return to Hewett School. At 7.30am the following day, GB4FUN was driven across to the science labs and set up for work at the Norwich comprehensive.

"My free periods were used to man GB4FUN. Members of staff sent small groups of students across. Lunchtime (1 hour) and after school (2+ hours) was used to entertain an ever growing band of student radio operators. This learning by 'immersion' produced a cohort of about 20 enthusiastic, reliable and eager 'radioheads'.

"Key sessions were booked by various sixth form groups - linguists, physicists, engineers etc to make contacts, look at radio technology in more detail and learn about amateur radio. Duke of Edinburgh award? Novice licence? Over the 'Science fact and fiction week' this allowed me to work with over 400 12- to 18-year old students. It was quite tiring but very enjoyable.

"As a teacher and radio amateur, I am very grateful to everyone at the RSGB, its sponsors and especially Carlos Eavis for GB4FUN. It is a superb resource and a welcome product of the years of work put in by many radio amateurs and education support groups like STELAR. I have further plans for GB4FUN in my school and its local relations - that's if the RSGB let me use it again. Please support it, please use it - I wish you could have seen the pleasure my students had in using and working GB4FUN."♦

The GB4FUN Supporters' Honour Roll

We asked members when renewing their membership to include a donation to help to continue to finance the GB4FUN mobile amateur radio demonstration vehicle. The following is the list of those members who have kindly sent in a donation by the deadline date for this issue. Contributions continue to be wanted: if you would like to help, please send your donation to 'GB4FUN', c/o RSGB HQ.

GB4FUN 'Big Hitters'

Mr D F Easton GM7AWK
Mr A W Anthony RS4765923

R Browne
Mrs C E Sanderson
J E Pepper
D F Allsopp
J R Jenkins
C J Smith
J Hall
Eur Ing M Levy
R F Attwood
J G Williams
G J Withers
T Cannon
A Sutton
M B Austin
R N Allen
R Davis
R B Sachs
W A Brooks
W N Handley
P W Gifford

2EQATY
2E1BRG
G0CHQ
G0DFA
G0KHY
G0LIN
G0ODQ
G0OWO
G0PTA
G0TFL
G0VAP
G0VQR
G0XPD
G1GDA
G1IPD
G1UNQ
G2CZS
G2DD5
G2FRZ
G3AWP

W G RENNISON
A Gibbings
K H Coates
P W Buck
R L Hodgson
G Dale
F G Bartlett
E H Matthews
G F Kimbell
J E Bright
A J Matthews
G W Gardiner
Ottley ARS
J Murdoch
M S Edib
M J French
A C Keeble
AT Hunt-Duke
G Barber
M J Adams
C J Seymour
J A Norton
D H Duffill
C N Wilson
R West
D R Banks

G3BOK R G W Leong
G3FDW S W J Vinnicombe
G3IGU D Cadman
G3LWT J A Newman
G3MAL J R Wilson
G3MFH Hastings & Rother Raynet
G3MOB R D Phillips
G3NPL J Edwards
G3TCT R E G Kendall
G3TJW Dr A J Seeds
G3UNM M Castell
G3WEB C Rose
G3XNO D J Pickford
G3YSD G W Ripley
G3YTY R Cunliffe
G3ZXD L McCullough
G4HPU G Hodgkinson
G4IOT W E McCallum
G4KY0 A Morris
G4LOF N S Lowson
G4NNA D F Easton
G4TLS A G Harvey
G4UBY D W Jones
G4VZ St Tybie ARS
G4YKS J F Jones
G6KIE A E Gwynne

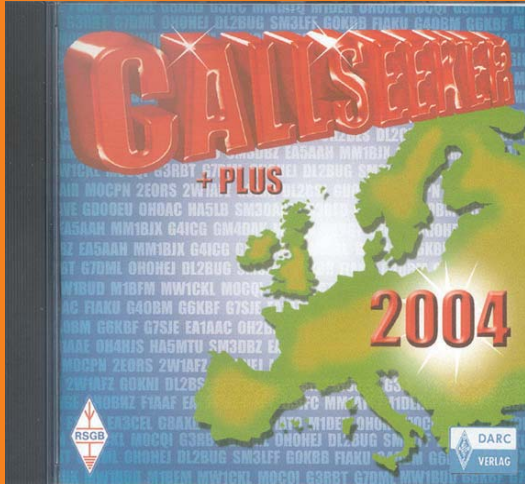
G6ODU D L Miller
G6UXM W C Salisbury
G6XGF J R Moritz
G6ZQE F Hibberd
G7BZX N Williams
G7ERC D G Morris
G7FKF J H Utne
G7PEB G R H Chance
G8BNE D B Sampson
G8D0H R A Dodge
G8FHY P Brown
G8MKE N J Lightfoot
G8TNE R R Humphries
G83AHV F L Cooper
G10HV Dr D J Simmons
G14RMA J R Blythe
G100HH R J Goose
G1MOPD L Foster
G1M1RKI M J Dunn
G1M4XRF D R Fenwick
G1M7AWK A W Anthony
G1UDHI R L Dries
G1W0UDJ The RSGB is also grateful to those many generous members who have sent donations anonymously, or who have asked us not to publish their names.

GW6JMC
GW8KSE
MOBMU
MOBVV
MOCRM
MODAV
MODCX
MOGRG
M1DOZ
M1ECP
M3AJY
M3NOD
M3RRH
M10BWK
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RS186376
RS20323
RS44977
RS47057
RS47659
RS8137

NEW

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Callseeker Plus 2004



Callseeker Plus is the popular CD version of the RSGB Yearbook with a powerful callsign search facility. This CD contains the complete contents of the RSGB 2004 Yearbook and much more.

All the information pages of the Yearbook are available and can be viewed using the Adobe Acrobat. The PDF format means you can see on screen or via your printer every page exactly as it appears in the printed Yearbook.

A sophisticated yet easy to use *Eurocall* search program is provided to access the callsigns contained. Callseeker Plus

2003 provides the ideal medium for rapidly searching for all or part of a callsign, postcode, name, town, keyword etc. Additionally the CD also includes the following callsigns from across Europe: 9A, DL, EA, EI, ES, F, HA, HB9, I, LX, LY, OE, OH, ON, OZ, SM, SP, SV and Z3

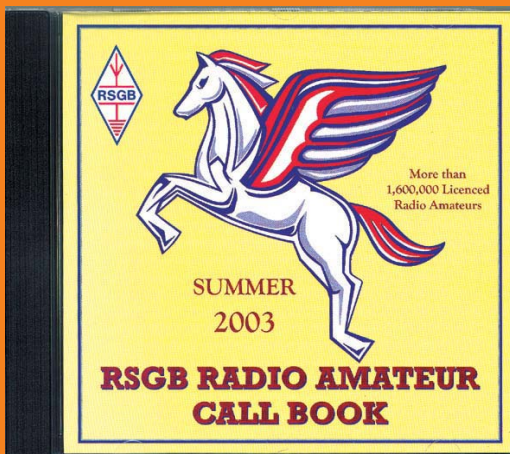
Windows 95/98

Note: Callseeker Plus 2004 is launched at the Leicester Amateur Radio Show on the 19th-20th September 2003 (Advance orders are taken from 1st September 2003)

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The Arno Elettronica E-H Antennas



The E-H antenna is one of several controversial small antennas that have appeared in recent years. It is claimed that they are based upon the theories of Poynting Vector Synthesis, originally proposed by Maurice Hatley, GM3HAT, in the mid-1980s. The 40m and 20m E-H antennas reviewed here are manufactured in Europe under licence by Arno Elettronica in Italy, who kindly supplied the antennas for review.

The E-H antenna was designed (US Patent 6,486,846) and is still being actively developed by Ted Hart, W5QJR, who has made available a large body of constructional information on his website (see 'Web-search' below). In essence, the E-H antenna comprises two metal cylinders which constitute a short dipole. These cylinders are fed via a phasing network located beneath the lower cylinder. The purpose of the phasing network is to cancel the phase shift between the applied voltage and the displacement current through the natural capacitance of the dipole, causing the E and H fields produced to be in phase. This provides the conditions for Poynting Vector Synthesis (PVS) to take place in the zone between the cylinders.

The E-H antenna in its present form is essentially a monoband device which has a wide SWR bandwidth, typically 400kHz between

the 2:1 SWR points for the 7MHz model. The antennas are constructed on a fibre-glass cylinder which is enclosed within a second fibre-glass cylinder that provides protection from the weather. The whole assembly is robust and clamps are provided for fixing the assembly to a stub mast. A six-page document contains advice on installing the antenna and contains some advice about routing the feeder to reduce pick-up on the coax sheath. The manufacturer's specification is given in **Table 1**.

Before installing either antenna in its final position, I mounted it approximately 5m above ground and checked the SWR and bandwidth using an MFJ-259 analyser with its case grounded. The bandwidth of both antennas met the specifications easily, as shown in **Table 2**.

In my opinion, there is no perfect way to review the

performance of an antenna for amateur use. Testing under ideal conditions can produce very false impressions of how it might perform at a typical amateur suburban location. Accordingly, this review makes comparisons between my normal antennas – a full-size G5RV and a 12AVQ vertical – and the 40m and 20m E-H antennas.

The G5RV runs north-south at a height of 10m. The stub hangs almost vertically from the centre of the antenna and is fed via a balun with approx 60ft of RG8 coaxial cable. This cable enters the rear of the house at first floor level via a grounded metal box along with other lengths of RG8. Because the cables run beneath the first floor alongside mains wiring, considerable care has been taken to minimise RF on the outside of these cable sheaths. On 40m the G5RV returns the sort of performance one might reasonably expect from a dipole mounted at approximately a quarter-wave above ground.

THE 40m E-H ANTENNA

The 40m E-H antenna was first mounted on a short stub pole at the side of the garage on the east side of the house. In this position it was approximately 20ft from both my house and my neighbour. Obviously its performance would improve as its height above ground was increased, but this is true of any antenna and it was felt that this position was not untypical of that where a small, discrete anten-

Left: Close-up of the 40m E-H antenna, with its outer fibre-glass sheath removed.

| | 7MHz | 14MHz |
|--------------------------------------|-------------------------------------|----------------------|
| Frequency coverage: | 7.0 - 7.1 | 14.0 - 14.350 |
| Input impedance: | 50+j0 at band centre | 50+j0 at band centre |
| Bandwidth (2:1 SWR): | 200kHz | 1MHz |
| (±3dB): | 400kHz | 2MHz |
| Maximum power rating | | |
| AM & RTTY: | 150W | 150W |
| SSB & CW: | 500W | 500W |
| Dimension of beaming part (sic): | 2% λ | 2% λ |
| Efficiency: | >95% | >95% |
| Gain (compared to full size dipole): | 0 - +2dB | 0 - +2dB |
| Polarisation: | Vertical | Vertical |
| Radiation pattern: | Optimised for medium and DX signals | |
| Dimensions: | 116 x 12.5cm | 107 x 8cm |

Table 1: Manufacturer's specifications for the antennas reviewed.



| | 7MHz | 14MHz |
|----------------------|--------------|--------------|
| Min SWR: | 1.6:1 @ 7.17 | 1:1 @ 14.17 |
| Bandwidth (2:1 SWR): | 7.08 - 7.30 | 13.7 - 14.47 |

Table 2: SWR minima and 2:1 bandwidths as measured by G3IHR.

Left: Faye Millward, M3FAY, with the 20m E-H antenna.

► **Right: 20m E-H antenna (centre) at 30ft and approximately 20ft from one end of the G5RV. The 40m antenna is mounted on the side of the garage (extreme right).**

na had to be used. It was used in this position for several days and a number of QSOs were made with signal reports comparing well with the G5RV. However, I decided that a fairer comparison could be made if I temporarily replaced my 2m Yagi with this antenna at a height of 30ft and approximately 20ft from one end of the G5RV.

Comparison tests are difficult to make for several reasons. Firstly, one relies heavily upon the cooperation of many other amateurs of whom only a few will be disposed to help through several changes of antenna. Accordingly, the majority of the contacts used here only rely upon comparison of the received signal. A single comparison could produce a result that was entirely due to chance and not the change in antenna!

The major element of this review is a summary of the performance that I observed over the period of the review and under a reasonable range of propagation conditions. A second element of the review is based upon a small number of tests conducted with three stations on 40m. In these tests each station recorded their 'S' meter reading for the reference G5RV and the E-H antenna. The receiving station in the test was not informed of the order of the tests at the time. All results were confirmed later by



e-mail. In order not to try the patience of the stations who kindly assisted in these tests each test was only repeated five times, ie five groups of three tests with the order rotated pseudo-randomly. Obviously all the tests with all stations could not take place simultaneously, so propagation conditions added another variable, the effect of which could only be estimated.

Table 3 averages the signal level from the reference antenna over all three stations for each of the tests and it indicates that propagation to all three stations remained sensibly constant during the period of the tests, ie within ± 0.5 'S' point.

In **Table 4** I have calculated the difference between the received signal from the standard antenna and that from the E-H antenna for each test. At first sight this would suggest that the signal from the E-H was consistently below that of the reference antenna. However, **Table 3** indicates a one 'S' point spread in the average received signal so the results deserve a more detailed examination. The question to ask here is whether there were significant differences between the two antennas, if the recorded differences were due to other factors, or if they could have occurred just by chance. Analysis of the results showed that the difference between the antennas could only have occurred by chance in 1% of cases, ie the difference was highly significant, as was the difference between the observations of the three stations. This latter difference was consistent with different station equipment and different propagation paths. So we can conclude from these tests that the E-H antenna performance was between 0.5 and 3.0 'S' points below the G5RV with a mean of 1.4 averaged over the three stations.

How did this result compare with operational experience? The majority

of contacts on 40m during the review period have been inter-G and continental, the more numerous being with G, DL and F. On average, the difference was small but the standard deviation shows considerable variability. With the remainder of Europe, east to beyond the Urals and south to Italy, Spain and Greece, north to Norway and Sweden very similar results were obtained. During a CW contest contacts were made with N2, K3, N9 and VE1; serial numbers were deliberately only sent once and were received without repetition - together with the obligatory 599! Two VU stations were heard but not worked; these were both at S7 on the E-H antenna and only about S4 on the G5RV. This latter points up more than any other result the very different radiation characteristics of the two antennas. Other semi-DX worked during the review were VO1 and VE3 during the 'BERU' contest, UA9 and PY7.

Reports from these contacts compared well with those I normally enjoy with the G5RV. On the odd occasion when I sought co-operation to compare with the G5RV the signal report was in favour of the E-H. **Table 5** summarises the received signal levels as compared with the G5RV over various call areas. Bearing in mind these reports embody several variables other than the two aerials, it is reasonable to conclude that on the longer distance paths the E-H performance is on a par with the G5RV; on shorter paths, ie inter-G, it is likely to be lower than the G5RV. This is consistent with what one might expect if comparing a horizontal and a vertical antenna and was borne out by the results in **Table 4** in which the two stations who were located furthest away (Stations 2 and 3) observed the smaller differences.

THE 20m E-H ANTENNA

The 20m E-H antenna was originally mounted on a 5m pole in the centre of

| Test | Stn 1 | Stn 2 | Stn 3 |
|---------------|-------|-------|-------|
| 1 | -3 | -0.5 | +1 |
| 2 | -3 | -0.5 | -1 |
| 3 | -4 | -0.5 | -1 |
| 4 | -3 | 0 | -1 |
| 5 | -3 | -0.5 | -1.5 |
| Mean: | -3.2 | -0.4 | -0.7 |
| Distance (km) | 375 | 474 | 475 |

Table 4: 40m E-H antenna received signal compared with reference antenna ('S' units).

| Call area | Total QSOs | Relative SignalLevel ('S' units) | | | | |
|-----------|------------|----------------------------------|----|----|----|-------|
| | | +3 | +2 | +1 | 0 | -1 -2 |
| G | 13 | - | - | 4 | 8 | 1 - |
| DL | 17 | 1 | 1 | 7 | 8 | - - |
| F | 8 | - | - | - | 8 | - - |
| EA | 2 | - | - | - | 1 | - 1 |
| I | 3 | - | - | - | 3 | - - |
| OH | 1 | - | - | - | 1 | - - |
| OK | 1 | - | - | - | 1 | - - |
| HA | 1 | - | - | - | 1 | - - |
| PA | 1 | - | - | 1 | - | - - |
| LZ | 1 | - | 1 | - | - | - - |
| 4X | 1 | 1 | - | - | - | - - |
| UR | 2 | - | - | 1 | 1 | - - |
| UA4 | 1 | - | - | - | 1 | - - |
| W/K | 9 | - | - | - | 7 | 1 1 |
| VE | 4 | - | - | 2 | 1 | 1 - |
| PY | 1 | - | - | 1 | - | - - |
| VU* | 2 | 2 | - | - | - | - - |
| Totals: | 68 | 4 | 2 | 16 | 39 | 5 2 |

Table 5: Comparison of received signal strengths from various call areas. The difference is 40m E-H antenna compared with G5RV; units are 'S' points. (* = Heard but not contacted.)

| Test | G5RV Reference antenna ('S' units) |
|------|------------------------------------|
| 1 | 6.1 |
| 2 | 6.5 |
| 3 | 6.5 |
| 4 | 6.5 |
| 5 | 7.0 |

Table 3: The average signal level in 'S' points from the G5RV reference antenna over all three stations for each of the five tests.

my garden, with a consequential coax run of some 25m to the shack. In this position I could conveniently measure its SWR bandwidth and also assess the effect, if any, of inserting braid-breakers in the feeder near to the antenna. It was then transferred to the site previously occupied by the 40m E-H antenna.

Organised tests such as that conducted with the 40m E-H were not contemplated. Instead, the received signal was compared with a 12AVQ vertical antenna, mounted at ground level approximately 25m from the shack. Where the opportunity arose, transmission comparisons were made between the two antennas also.

Unfortunately for much of the review period, short skip conditions prevailed and most contacts were with stations in Europe. The E-H antenna compared very favourably with the 12AVQ and often with the G5RV which is, of course quite directional on this band. On receive its characteristics are almost identical with the 12AVQ, ie a considerable increase in solar noise as compared with the G5RV which exhibits a quiet background on 14MHz, and an improved response to stations over 500km. The same increase in solar noise was noted with the 7MHz E-H antenna suggesting that it has an additional high-angle lobe.

Sixty-five contacts were made over a period from 8 March to 21 April 2003 at various times during the day. Outside the short-skip that prevailed most of the time, some DX was worked, notably 579 from VP5 against a considerable pile-up; three JA stations in a row during a contest; CT3 and EA8. Ed, W2HTI, in North Carolina gave me 569 on the E-H and 579 with the 12AVQ, whilst Ted, F5MW, in Marseille found negligible difference between the two antennas and the G5RV. Similarly in a QSO with Lars, SM6FPZ, where my signal was 599 on both antennas. The E-H appeared at all times to be omnidirectional in the horizontal plane but the solar noise level at times was detrimental. In particular, VU2VJT was worked on the 12AVQ but was inaudible on the E-H.

Table 6 summarises these results and gives the average signal report received from each area. The caveats given for the 40m comparisons apply here too. The variation against the 12AVQ was less marked and the antenna held its own very well.

CONCLUSIONS

To summarise, from an operational stand-point both of the E-H antennas performed extremely well as general-purpose antennas, exhibiting no significantly different performance to my normal antennas. They both exhibit characteristics that are similar to a ground-plane antenna or a vertical dipole, showing some en-

hanced low-angle radiation as compared with a horizontal antenna.

Both antennas worked quite well at ground level but

only compared fa-

vourably with

the other an-

tennas when

operated under

similar condi-

tions, ie at a simi-

lar height and posi-

tion with relation to

surrounding objects.

The nature of the

above tests preclude any possibility

of verifying the manufacturers claim

of 0 to +2dB over a dipole.

Where space is restricted I believe

they will produce comparable or

better results than a wire antenna

that has to be bent to fit into a

restricted space, eg a loft, or other

'stealth' antennas. The main disad-

vantage is that the E-H is a mono-

band antenna.

The E-H antenna is claimed to pro-

duce a better signal-to-noise ratio on

receive than a conventional Hertzian

antenna. I did not experience this on

either band; the response to local

noise was lower, but as noted above

the level of solar noise was equal to

that of my 12AVQ vertical.

One problem that needs to be

resolved is that of RF on the coax

sheath. In common with many

installations I have to route my

feeders under floors and alongside

mains cables. It is essential that RF

on the cable sheaths is kept to a

minimum. To this end I make fre-

quent use of ferrite toroid chokes.

The manufacturers claim that any

RF on the feeder is due to pick-up

within the intense field of the anten-

na and not due to any common-

mode currents caused by mis-match

at the antenna. However, they also

warn that the use of a choke near

the antenna will cause phase

changes that may detune the anten-

na and we cannot have it both ways!

On the 40m E-H I have successfully

used a choke in the coax feed where

it enters the house without causing

any detuning of the antenna. RF in

the shack is negligible although the

field strength from the antenna is

very high as compared with that

measured from the G5RV. On 20m it

is a different story. With a braid-

breaking choke closer to the anten-

na than 10m the antenna was seri-

ously detuned. In its present posi-

tion at 10m above ground I have a

six-turn coil of coax and a coax

braid-breaker but there is still some

RF in the shack. There has been

considerable discussion of this

problem on the Internet E-H forum

and some solutions have been sug-

gested. I believe it is important that

the manufacturer should address

this problem. This antenna will I am

sure be attractive to those amateurs

who have little space or suffer from



planning restrictions. In those situations, it is essential that RF can be piped around with minimal EMC problems.

I understand that an 80m E-H antenna is available and a design for 160m is on the cards. I can imagine that mounting these at any height may pose significant problems due to their size. Nevertheless, it will be interesting to see how they perform on bands where lack of real estate poses an even greater problem.

I am indebted to Pat, PA3EZJ; Howard, EI5EG, and Stan, GM3KXQ, for their time and patience in assisting me in the above tests. Thanks too to the manufacturer, Arno Elettronica, Via Volterrana, 208/1 56033 Capannoli (PISA), Italy, for the loan of the antennas reviewed. The price of the 7.0 and 14.0MHz antennas is 144 euros (approx £100) each inc VAT (P&P extra). Models are available for the bands from 3.5MHz to 50MHz.

Editor's note: the manufacturers have informed us that the power rating of all models of E-H antenna has now been increased to 2kW on SSB and CW, and 500 watts on RTTY or AM. Each E-H antenna is also now equipped with an external coaxial sleeve fine tuning system that allows it to be tuned to exactly the desired frequency on each band. ♦

| Call area | Total QSOs | Relative +1 | Signal 0 | Level -1 | Report received (average) ('S' units) |
|----------------|------------|-------------|----------|----------|---------------------------------------|
| DL, F, PA | 11 | 1 | 7 | 3 | 7 |
| UA (European) | 11 | 6 | 4 | 1 | 7 |
| UA (Asian) | 12 | 7 | 3 | 2 | 6 |
| Other E Europe | 6 | 1 | 5 | - | 8 |
| Scandinavia | 4 | - | 4 | - | 8 |
| S Europe | 11 | 3 | 5 | 3 | 8 |
| CT3 / EA8 | 3 | 2 | 1 | - | 7 |
| W | 3 | - | 2 | 1 | 5 |
| VP5 | 1 | - | 1 | - | 7 |
| JA | 3 | - | 3 | - | 9* |
| Totals: | 65 | 20 | 35 | 10 | |

Table 6: 20m E-H antenna received signal level compared with 12AVQ vertical (* = Contest report!)

WEB SEARCH



Arno Elettronica
Ted Hart, W5QJR
Internet E-H forum

www.ehuroantenna.com
www.eh-antenna.com
<http://groups.yahoo.com/group/eh-antenna>

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RSGB YEARBOOK 2004

Edited by Steve White, G3ZVW
Reviewed by RSGB HQ Staff

This is it – this is *the* publication every UK radio amateur should have in his or her shack. Once again, the 2004 edition of the *RSGB Yearbook* is bigger than ever, with more pages in the Information Directory section, more pages in the callsign listings section and more colour pages.

Every page has been reviewed and updated from last year. The *Yearbook* reflects the current state of the hobby, with pages devoted to contesting, awards, satellites and propagation. New for the 2004 edition are pages on abbreviations and codes, International Marconi Day, Raynet and the

RSGB IOTA Honour Roll and Annual Listings. More space has been allocated to trophies and awards, with more colour photos of the winners.

Especially worthy of mention are the pages on repeaters, which have a completely new look with this year's edition of the *Yearbook*. There is now a coloured map for every repeater channel on each band, which shows the geographical coverage of all the repeaters on that channel.

Almost any question about amateur radio in the UK today can be answered by referring to the *Yearbook*. If it is a few years since you last bought a *Yearbook*, you really should get the latest version.

Thanks to the success of the

Foundation Licence and the recent increase in the number of amateur radio licences, the callsign listing section is bigger than ever. As well as the UK radio amateurs' callsign listings, there are listings for the Irish Republic, for short wave listeners, the special short contest callsigns, plus surname and post-code listings. All in all it adds up to a reference book that no radio amateur should be without.

RSGB YEARBOOK 2004

Edited by Steve White, G3ZVW
RSGB Publications, 2003
472 pages, A4 format (210 x 297mm)
ISBN 1-872309-92-5
Member's price £14.44 (non-members £16.99).



RSGB DELUXE LOG BOOK 2004

A minority of amateurs choose to keep their log records on computer, and for those who have made this decision there are several excellent computer logging programs around. What is available for the majority of amateurs who prefer to keep a traditional paper log book, though? For many years the *de facto* standard was the standard RSGB log book but in recent years the

Society has introduced an annual 'deluxe' log book. "But I'm only half-way through my log book, I don't need a new log book yet", you might say. Welcome to

the concept of the *annual log book*! By signing off your log book at the end of each year, ie by adding a line after your last contact of the calendar year stating "Log book closed [date]", you can legitimately start a brand new log on 1 January the following year. In, say, 25 years time – when you come to look back over your amateur radio career – you will appreciate the convenience of having each year's contacts logged in separate volumes!

But the *Deluxe Log Book 2004* is not just a log book, it also contains a mass of useful information – just the sort of thing you need on your operating desk – in the same handy volume as the log itself. Included is a prefix/country/ zone check-list per band, so that you can keep track of which countries you have worked on each band on an annual basis, locator maps, QSL bureau sub-managers addresses, band plans, the GB2RS news broadcast schedule, repeater listings and a diary of events. New for 2004 is a reminder of the phonetic alphabet, the RST code and a selection of Q codes. The log book section itself runs across the 'spread' of two pages, allowing plenty of space to enter the date, start and end time, frequency, mode, power, callsign, reports and QSLs sent and received, and for those all-important 'remarks'.

At just £4.24 for RSGB members (£4.99 non-members) – the same price as the standard RSGB log book – the *Deluxe Log Book* represents excellent value for money.

RSGB Deluxe Log Book 2004

RSGB Publications, 2003
96 pages, (210 x 254mm)
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RSGB CALLSEEKER PLUS 2004

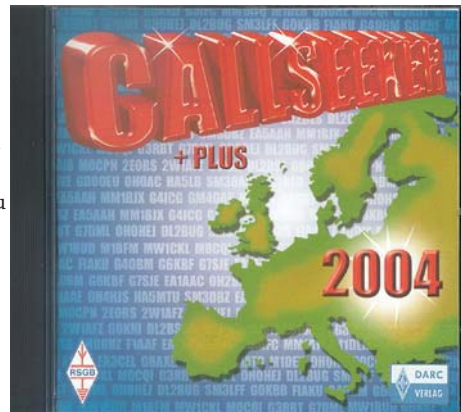
Callseeker now needs no introduction. Basically a CD-ROM version of the *RSGB Yearbook*, containing all the information in the paper version of the *Yearbook* (both the Information Directory and Callbook sections) in an easily-searchable form, the 'Plus' in its name gives you the clue that there is more to it than just that. *Callseeker Plus* incorporates *Eurocall*, the European callbook on CD, and in addition to the UK and Republic of Ireland callsigns that you will find in the *Yearbook*, *Callseeker Plus* includes the callbooks for Austria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Macedonia (Former Yugoslav Republic of), Poland, Spain, Sweden and Switzerland.

The *Yearbook* pages come in the form of PDF files. To read them, you will need to have *Acrobat Reader* installed on your computer. If you don't have *Reader*, never fear, it is included free of charge on the *Callseeker Plus* CD. You can then use it to view PDF files from any other source, eg on the Internet.

Callseeker Plus is ideal for every radio amateur who prefers to search for data electronically rather than look it up in a book. It is essential for those who require the callsigns and addresses of amateurs in the European countries covered. In short, if you have a PC and whether or not you have the *RSGB Yearbook*, you should get a copy of *Callseeker Plus 2004*.

RSGB Callseeker Plus 2004

RSGB Publications, 2003
Member's price £11.89 (non-members £13.99).



All three products mentioned on this page – RSGB Yearbook 2004, RSGB

Callseeker Plus 2004, and the RSGB Deluxe Log Book 2004 – are being launched at the Leicester Show on 19/20 September. Advance orders are being taken from

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RDP-3B 10/15/20mtrs length 7.40m.....**£99.95**
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RDP-6B 10/12/15/17/20/30mtrs boom length 1.00m. Length 10.0m.....**£199.95**

HF DELTA LOOPS

DLHF-100 10/15/20mtrs (12/17-30m) Boom length 4.2m. Max height 6.8m. Weight 35kg. Gain 10dB.....**£399.95**

HAND-HELD ANTENNAS

MRW-300 Rubber Duck TX 2 Metre & 70 cms RX 25-1800 Mhz Length 21cm BNC fitting.....**£12.95**
MRW-310 Rubber Duck TX 2 Metre & 70 cms Super Gainer RX 25-1800 Length 40cm BNC fitting.....**£14.95**
MRW-232 Mini Miracle TX 2 Metre 70 & 23 cms RX 25-1800 Mhz Length just 4.5cm BNC fitting.....**£19.95**
MRW-250 Telescopic TX 2 Metre & 70 cms RX 25-1800 Mhz Length 14-41cm BNC fitting.....**£16.95**
MRW-200 Flexi TX 2 Metre & 70cms RX 25-1800 Mhz Length 21cm SMA fitting.....**£19.95**
MRW-210 Flexi TX 2 Metre & 70cms Super Gainer RX 25-1800 Mhz Length 37cm SMA fitting.....**£22.95**
 All of the above are suitable to any transceiver or scanner.
 Please add £2.00 p+p for hand-held antennas.

HB9CV 2 ELEMENT BEAM 3.5 dBd

70cms (Boom 12").....**£15.95**
2 metre (Boom 20").....**£19.95**
4 metre (Boom 23").....**£27.95**
6 metre (Boom 33").....**£34.95**
10 metre (Boom 52").....**£64.95**
6/2/70 Triband (Boom 45").....**£64.95**

CROSSED YAGI BEAMS All fittings Stainless Steel

2 metre 5 Element (Boom 64") (Gain 7.5dBd).....**£74.95**
2 metre 8 Element (Boom 126") (Gain 11.5dBd).....**£94.95**
70 cms 13 Element (Boom 83") (Gain 12.5dBd).....**£74.95**

YAGI BEAMS All fittings Stainless Steel

2 metre 4 Element (Boom 48") (Gain 7dBd).....**£24.95**
2 metre 5 Element (Boom 63") (Gain 10dBd).....**£44.95**
2 metre 8 Element (Boom 125") (Gain 12dBd).....**£59.95**
2 metre 11 Element (Boom 185") (Gain 13dBd).....**£89.95**
4 metre 3 Element (Boom 45") (Gain 8dBd).....**£49.95**
4 metre 5 Element (Boom 128") (Gain 10dBd).....**£59.95**
6 metre 3 Element (Boom 72") (Gain 7.5dBd).....**£54.95**
6 metre 5 Element (Boom 142") (Gain 9.5dBd).....**£74.95**
70 cms 13 Element (Boom 76") (Gain 12.5dBd).....**£49.95**

ZL SPECIAL YAGI BEAMS ALL FITTINGS STAINLESS STEEL

2 metre 5 Element (Boom 38") (Gain 9.5dBd).....**£39.95**
2 metre 7 Element (Boom 60") (Gain 12dBd).....**£49.95**
2 metre 12 Element (Boom 126") (Gain 14dBd).....**£74.95**
70 cms 7 Element (Boom 28") (Gain 11.5dBd).....**£34.95**
70 cms 12 Element (Boom 48") (Gain 14dBd).....**£49.95**

MULTI PURPOSE ANTENNAS

MSS-1 Freq RX 25-2000 Mhz, TX 2 mtr 2.5 dBd Gain, TX 70cms 4.0 dBd Gain, Length 39".....**£39.95**
MSS-2 Freq RX 25-2000 Mhz, TX 2 mtr 4.0 dBd Gain, TX 70cms 6.0 dBd Gain, Length 62".....**£49.95**
IVX-2000 Freq RX 25-2000 Mhz, TX 6 mtr 2.0 dBd Gain, 2 mtr 4dBd Gain, 70cms 6dBd Gain, Length 100".....**£89.95**
 Above antennas are suitable for transceivers only

HALO LOOPS

2 metre (size 12" approx).....**£12.95**
4 metre (size 20" approx).....**£18.95**
6 metre (size 30" approx).....**£24.95**

G5RV Wire Antenna (10-40/80 metre)

All fittings Stainless Steel

| Standard | FULL | HALF |
|---|--------|--------|
| Hard Drawn | £22.95 | £19.95 |
| Flex Weave | £24.95 | £22.95 |
| PVC Coated | £32.95 | £27.95 |
| Flex Weave | £37.95 | £32.95 |
| Deluxe 450 ohm PVC Flexweave | £49.95 | £44.95 |
| TS1 Stainless Steel Tension Springs (pair) for G5RV | £19.95 | |

G5RV INDUCTORS

Convert your half size g5rv into a full size with just 8ft either side. Ideal for the small garden.....**£19.95**

SHORT WAVE RECEIVING ANTENNA

MD37 SKY WIRE (Receives 0-40Mhz).....**£39.95**
 Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All made no A.T.U. required. 2 "S" points greater than other Baluns.

Shop 24hrs a day on-line at www.amateurantennas.com

UNIT 12, CRANFIELD ROAD UNITS, CRANFIELD ROAD
 WOBURN SANDS, BUCKS MK17 8UR. sales@moonrakerukltd.com

Callers welcome.
 Opening times:
 Mon-Fri 9-6pm



MOUNTING HARDWARE ALL GALVANISED

| | |
|---|--------|
| 6" Stand Off Bracket (complete with U Bolts) | £6.00 |
| 9" Stand off bracket (complete with U Bolts) | £9.00 |
| 12" Stand off bracket (complete with U Bolts) | £12.00 |
| 12" T & K Bracket (complete with U Bolts) | £11.95 |
| 18" T & K Bracket (complete with U Bolts) | £17.95 |
| 24" T & K Bracket (complete with U Bolts) | £19.95 |
| 36" T & K Bracket (complete with U Bolts) | £29.95 |
| Chimney lashing kit | £12.95 |
| Double chimney lashing kit | £24.95 |
| 3-Way Pole Spider for Guy Rope/ wire | £3.95 |
| 4-Way Pole Spider for Guy Rope/ wire | £4.95 |
| 11/2" Mast Sleeve/Joiner | £8.95 |
| 2" Mast Sleeve/Joiner | £3.95 |
| Solid copper earth rod 4' | £9.95 |
| Pole to pole clamp 2"-1.5" | £4.95 |
| Di-pole centre (for wire) | £4.95 |
| Di-pole centre (for aluminium rod) | £4.95 |
| Dog bone insulator | £1.00 |
| Dog bone insulator heavy duty | £2.00 |

5ft POLES H/DUTY (SWAGED)

Heavy Duty Ali (1.2mm wall)

| | |
|--|--------|
| 1 1/4" single 5' ali pole | £7.00 |
| 1 1/4" set of four (20' total approx) | £24.95 |
| 1 1/2" single 5' ali pole | £10.00 |
| 1 1/2" set of four (20' total approx) | £34.95 |
| 1 3/4" single 5' ali pole | £12.00 |
| 1 3/4" single 5' ali pole (20' total approx) | £39.95 |
| 2" single 5' ali pole | £15.00 |
| 2" set of four (20' total approx) | £49.95 |

(All swaged poles have a push fit to give a very strong mast set)

REINFORCED HARDENED FIBRE GLASS MASTS (GRP)

| | |
|-----------------------------------|--------|
| 112" Diameter 2 metres long | £16.00 |
| 134" Diameter 2 metres long | £20.00 |
| 2" Diameter 2 metres long | £24.00 |

GUY ROPE 30 METRES

| | |
|--|--------|
| MGR-3 3mm (maximum load 15 kgs) | £6.95 |
| MGR-4 4mm (maximum load 50 kgs) | £14.95 |
| MGR-6 6mm (maximum load 140 kgs) | £29.95 |

CABLE & COAX CABLE

| | |
|---|-------|
| RG58 best quality standard per mt | 35p |
| RG58 best quality military spec per mt | 60p |
| Mini 8 best quality military spec best quality per mt | 70p |
| RG213 best quality military spec per mt | 85p |
| H200 best quality military coax cable per mt | £1.10 |
| 3-core rotator cable per mt | 45p |
| 7-core rotator cable per mt | £1.00 |

PHONE FOR 100 METRE DISCOUNT PRICE.

CONNECTORS & ADAPTERS

| | |
|-----------------------------------|------------|
| PL259/9 | £0.75 each |
| PL259/6 | £0.75 each |
| PL259/7 for mini 8 | £1.00 each |
| BNC (Screw Type) | £1.00 each |
| BNC (Solder Type) | £1.00 each |
| BNC for 9mm (RG213) | £2.50 |
| N TYPE for RG58 | £2.50 each |
| N TYPE for RG213 | £2.50 each |
| SO239 to BNC | £1.50 each |
| PL259 to BNC | £2.00 each |
| N TYPE to SO239 | £3.00 each |
| BNC to N-type | £2.50 |
| SMA to BNC | £3.95 |
| SMA to SO239 | £3.95 |
| SMA to PL259 | £3.95 |
| SMA to BNC (male) | £3.95 |
| SO239 chassis socket round | £1.00 |
| N-type chassis socket round | £2.50 |
| SO239 double female | £1.50 |
| N-type double female | £2.50 |
| SO239 double female | £1.00 |

YAGI COUPLERS

| | |
|---------------------------------|--------|
| YC-6m For 2 x 50MHz Yagi | £29.95 |
| YC-2m For 2 x 144MHz Yagi | £24.95 |
| YC-7m For 2 x 70cm Yagi | £19.95 |

10/11 METRE VERTICALS

| | |
|---|--------|
| G.A.P.12 1/2 wave aluminium (length 18' approx) | £24.95 |
| G.A.P.58 5/8 wave aluminium (length 21' approx) | £29.95 |

BALUNS

| | |
|---|--------|
| MB-1 1:1 Balun 400 watts power | £24.95 |
| MB-4 4:1 Balun 400 watts power | £24.95 |
| MB-6 6:1 Balun 400 watts power | £24.95 |
| MB-1X 1:1 Balun 1000 watts power | £29.95 |
| MB-4X 4:1 Balun 1000 watts power | £29.95 |
| MB-6X 6:1 Balun 1000 watts power | £29.95 |
| MB-Y2 Yagi Balun 1.5 to 50MHz 1KW | £24.95 |

TRI/DUPLEXER & ANTENNA SWITCHES

| | |
|---|--------|
| MD-24 HF or VHF/UHF internal duplexer (1.3-225MHz) (350-540MHz) SO239/PL259 fittings | £22.95 |
| MD-24N same spec as MD-24 but "N-type" fittings | £24.95 |
| MD-25 HF or VHF/UHF internal/external duplexer (1.3-225MHz) (350-540MHz) SO239 fittings | £24.95 |
| MX2000 HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz) | £49.95 |
| CS201 Two-way di-cast antenna switch. Freq: 0-1000MHz max 2,500 watts SO239 fittings | £18.95 |
| CS201-N Same spec as CS201 but with N-type fittings | £28.95 |
| CS401 Same spec as CS201 but 4-way | £49.95 |

ANTENNA ROTATORS

| | |
|---|---------|
| AR-31050 Very light duty TV/UHF | £24.95 |
| AR-300XL Light duty UHF/VHF | £49.95 |
| YS-130 Medium duty VHF | £79.95 |
| RC5-1 Heavy duty HF | £349.95 |
| RG5-3 Heavy Duty HF Inc Pre Set Control Box | £449.95 |
| AR26 Alignment Bearing for the AR300XL | £18.95 |
| RC26 Alignment Bearing for RC5-1/3 | £49.95 |

MOBILE MOUNTS

| | |
|---|--------|
| Turbo mag mount 7" 4mtrs coax/PL259 3/8 or SO239 | £14.95 |
| Tri-mag mount 3 x 5" 4mtrs coax/PL259 3/8 or SO239 | £39.95 |
| Hatch Back Mount (stainless steel) 4 mtrs coax/PL259 3/8 or SO239 fully adjustable with turn knob | £29.95 |
| Gutter Mount (same as above) | £29.95 |
| Rail Mount (aluminium) 4mtrs coax/PL259 suitable for up to liinch roof bars or poles 3/8 fitting | £12.95 |
| SO259 fitting | £14.95 |
| Gutter Mount (cast aluminium) 4mtrs coax/PL259 3/8 fitting | £9.95 |
| SO259 fitting | £12.95 |
| Hatch Back Mount 3/8 4mtrs coax/PL259 | £12.95 |
| Roof stud Mount 4mtrs coax/PL259 3/8 or SO239 fitting | £12.95 |

ANTENNA WIRE & RIBBON

| | |
|---|--------|
| Enamelled copper wire 16 gauge (50mtrs) | £9.95 |
| Hard Drawn copper wire 16 gauge (50mtrs) | £12.95 |
| Equipment wire Multi Stranded (50mtrs) | £9.95 |
| Flexweave high quality (50mtrs) | £27.95 |
| PVC Coated Flexweave high quality (50mtrs) | £37.95 |
| 300Ω Ladder Ribbon heavy duty USA imported (20mtrs) | £15.00 |
| 450Ω Ladder Ribbon heavy duty USA imported (20mtrs) | £15.00 |

(Other lengths available, please phone for details)

HF BALCONY ANTENNA

| | |
|---|---------|
| BAHF-4 FREQ:10-15-20-40 Mtrs LENGTH: 1.70m HEIGHT: 1.20m POWER: 300 Watts | £129.95 |
|---|---------|

MISCELLANEOUS ITEMS

| | |
|---|------------|
| CDX Lightning arrester 500 watts | £19.95 |
| MDX Lightning arrester 1000 watts | £24.95 |
| AKD TV1 filter | £9.95 each |
| Amalgamating tape (10mtrs) | £7.50 |
| Desoldering pump | £2.99 |
| Alignment 5pc kit | £1.95 |

TELESCOPIC MASTS (aluminium & fibreglass options)

| | |
|--|---------|
| TMA3 3" to 1 1/4" heavy duty aluminium telescopic mast set, approx 40ft when erect, 6ft collapsed | £199.95 |
| TMA2 2 1/4" to 1 1/4" heavy duty telescopic mast set, approx 40ft when erect, 9ft collapsed | £149.95 |
| TMA1 2" to 1 1/4" heavy duty aluminium telescopic mast set, approx 20ft when erect, 6ft collapsed | £99.95 |
| TMAF-1 2" to 1 1/4" heavy duty fibreglass telescopic mast set, approx 20ft when erect, 6ft collapsed | £99.95 |
| TMAF-2 2 1/4" to 1 1/4" heavy duty telescopic fibreglass mast set, approx 40ft when erect, 9ft collapsed | £189.95 |

HF YAGI

| | |
|--|---------|
| HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dBd BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts | £329.95 |
|--|---------|

ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
 FREQ:10-15-20 Mtrs GAIN:8 dBd
 BOOM:4.42m LONGEST ELE:8.46m
 POWER:2000 Watts

ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM
 FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m
 POWER:2000 Watts

40 Mtr RADIAL KIT FOR ABOVE

HF VERTICALS

VR3000 3 BAND VERTICAL
 FREQ: 10-15-20 Mtrs
 GAIN: 3.8 dBd HEIGHT:3.80m POWER:2000 Watts (without radials)
 POWER: 500 Watts (with optional radials)

VR5000 5 BAND VERTICAL
 FREQ:10-15-20-40-80 Mtrs
 GAIN:3.5 dBd HEIGHT:4.00m RADIAL LENGTH:2.30m (included). POWER: 500 Watts

EVX4000 4 BAND VERTICAL
 FREQ:10-15-20-40 Mtrs
 GAIN:3.5 dBd HEIGHT:6.50m
 POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials)

EVX5000 5 BAND VERTICAL
 FREQ:10-15-20-40-80 Mtrs
 GAIN:3.5 dBd HEIGHT:7.30m POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials)

EVX6000 6 BAND VERTICAL
 FREQ:10-15-20-30-40-80 Mtrs HEIGHT:5.00m RADIAL LENGTH:1.70m (included) POWER:800 Watts

EVX8000 8 BAND VERTICAL
 FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts

80 MTR RADIAL KIT FOR ABOVE

TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)

| | |
|---|--------|
| UTD160 FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts | £44.95 |
| MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts | £39.95 |
| MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts | £44.95 |
| MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts | £89.95 |
| MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts | £44.95 |
| MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts | £79.95 |

(MTD-5 is a crossed di-pole with 4 legs)

PATCH LEADS

STANDARD LEADS

| | |
|--------------------------------------|--------|
| 1mtr RG58 PL259 to PL259 lead | £3.95 |
| 10mtr RG58 PL259 to PL259 lead | £7.95 |
| 30mtr RG58 PL259 to PL259 lead | £14.95 |

MILITARY SPECIFICATION LEADS

| | |
|--|--------|
| 1mtr RG58 Mil spec PL259 to PL259 lead | £4.95 |
| 10mtr RG58 Mil spec PL259 to PL259 lead | £10.95 |
| 30mtr RG58 Mil spec PL259 to PL259 lead | £24.95 |
| 1mtr RG213 Mil spec PL259 to PL259 lead | £4.95 |
| 10mtr RG213 Mil spec PL259 to PL259 lead | £14.95 |
| 30mtr RG213 Mil spec PL259 to PL259 lead | £29.95 |

(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)

CS401 4-WAY ANTENNA SWITCH

★ 2.5kW power ★ 0-1000MHz
 ★ Lightning surge protection
 ★ Unused connections grounded

OUR PRICE just £49.95
 plus £6.00 P&P

The Leicester Amateur Radio Show and Convention takes place on Friday 19 and Saturday 20 September at the Castle Donington International Exhibition Centre, Donington Park, in north-west Leicestershire.

Leicester Amate

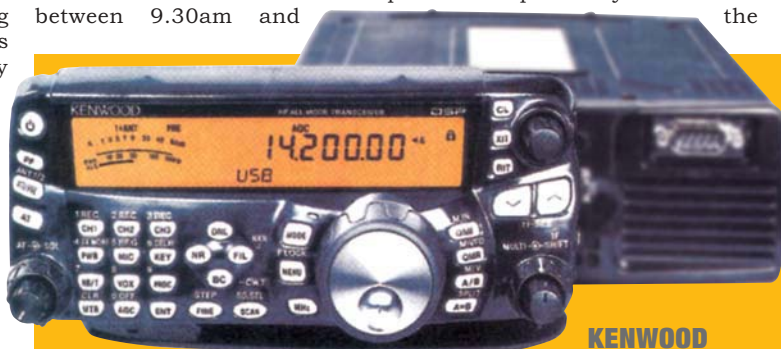
19-20
SEPTEMBER
2003

The 32nd annual Leicester Amateur Radio Show features amateur radio, computers and electronics. In excess of 100 exhibitors are finally expected to be at the show and those who had confirmed their attendance by the time of going to press are listed below. As well as the traders, there is a bring and buy stand, a 'flea market' and a Convention which will include presentations on DSP, IARU DF, satellites by AMSAT-UK, as well as an RSGB Forum and the RAIBC AGM. The ROTA (Radio Amateur Old Timers' Association) AGM will be held a couple of miles away and transport will be provided for anyone requiring it (details on the Internet at go.to/raota).

As one of the biggest amateur radio shows in the country, the Leicester Show is also a great social gathering: bring along your own QSL card to display on the QSL board so that your friends can look out for you! Demonstration amateur stations complete the line-up of radio attractions.

The Castle Donington International Exhibition Centre is less than five minutes from J23A and J24 of the M1: listen out for the GB0LS talk-in stations on 145.550 and 433.550MHz. The show is open between 9.30am and

5.30pm Friday and from 9.30am to 5.00pm Saturday. Admission is £3.50 (OAPs and under-16s £3), or a 2-day ticket costs £6 (OAPs and under-16s £5). Children under 12 are free if accompanied by an adult. Tickets to the ama-



KENWOOD

SOTA BEAMS

SOTA Beams is a new company that will be exhibiting at Leicester for the first time. Responding to the increase in 2m portable activity brought about by the introduction of the FT-817 and the Summits on the Air programme, SOTA Beams has designed a 2m lightweight portable beam (below). The beam is a computer-optimised 3-element Yagi and has some unique features. It is assembled in a few seconds and can be packed up into its own boom. It has ready-fitted brackets for both horizontal and vertical polarisation making switching from FM to SSB very easy and, perhaps best of all, it weighs less than 7oz! The beam is designed to be used with lightweight 'fishing pole' type masts and comes complete with a guying kit and feeder. It is also supplied pre-tuned so it works straight out of the packet. This is the first of several innovative products for the travelling amateur that SOTA Beams has planned. SOTA Beams can be purchased online at www.sotabeams.co.uk



Kenwood will shortly be launching a new 2m hand-held and an HF/6m mobile/base/DXpedition rig. The handheld comes in two versions – the **TH-K2ET** (with keypad) and the **TH-K2E** (without). Both will have an Ni-Mh battery as standard giving 5W output and they will be on display for the first time in the UK at the Leicester Show. The new **HF/6m rig** is not due to be launched in Japan until October, but Kenwood will have a 'display-only' pre-production sample to show how it looks (above). This rig will also be available in two versions: one with 100W output and a built-in HF-50MHz automatic ATU, and the other without the ATU but with 200 watts output. It will be compact in size with a detachable front panel, making it ideal for mobile use. Kenwood claims that the rig's quad-mixer will offer dynamic range in the TS-950 class. AF DSP provides noise reduction, beat cancel and a host of other features. Go along to the Kenwood stand to find out more!

ML&S

Several new **Maldol** antennas will be launched at the Leicester Show and will be on display on the **Martin Lynch & Sons** stand. In particular, Maldol is now manufacturing antennas for the 5MHz 'band'.

W&S plc

Waters & Stanton have been appointed UK distributors for the USA-built **High Sierra** range of



EXHIBITORS

At the time of going to press, the following had confirmed that they would be attending the Leicester Show this year.

In the main exhibition hall:

AOR (UK) Ltd
Barenco
bni
Computer Junk Shop
G H Engineering and G1MFG.com
H Morgan Smith
Holux UK Ltd
Icom (UK) Ltd
InkTec Midlands
John Dilkes
Kenwood Electronics (UK) Ltd
Linear Amp UK
Maplin
Martin Lynch & Sons
Moonraker
Nevada
PW Publishing Ltd
Radioswap.co.uk
Radioworld
Rich Electronics
Rigs of Distinction
Ronald Computers Ltd
RSGB
Ruth Royle
Sandpiper Communications
SOTA Beams
Strikalite
Tams 2000 Ltd
Timestep Electronics
TLX Electronics
Vann Draper Electronics Ltd
Waters & Stanton plc
Westlake Electronics
WiMo Antennen und Elektronik GmbH
Yaesu (UK) Ltd

Traders outside the Hall:

Andy Cole
Chris & Ian Hewitt
Computer Junk Shop

Harrison Electronics
R Wolverson
Robin Holderness
Shipley Vintage Wireless
UBM (London)
WCN Supplies

Clubs and associations expected to be exhibiting at the show include:

4 Metre News
5 Towns ARC
AMSAT-UK
ARCON
BARTG
BATC
British Railways Amateur Radio Club
Danpack
Derby & District ARS
e-QSO
G QRP Club
International Listeners' Association
ISWL
Leicester Raynet
Leicestershire Repeater Group
Malvern Hills Repeater Group
March & District Radio Amateur Society
Maxpack
Medium Wave Circle
Nottingham QRP Club
Radio Officers' Association (Merchant Navy)
RAFARS
RAIBC
ROTA
Raynet Supplies
RNARS
RSARS
Rugby Amateur Transmitting Society
South Yorkshire Repeater Group
Vintage & Military ARS
Worked All Britain

ur Radio Show

teur radio show also allow discounted admission to the Donington Racing Car Collection at a nearby venue. Camping and caravanning is available on site – contact the organisers for further details.

Further details from Geoff Dover,

G4AFJ, tel: 01455 823344; fax: 01455 828273; e-mail: g4afj@argonet.co.uk or see the Leicester Show website at www.lars.org.uk

NEW PRODUCTS

The Leicester Show is always a good

time to check out the latest amateur radio equipment and accessories, as many companies use the occasion to launch new products in the UK. Here's what we have been able to find out about what will be new at Leicester this year. ♦

motorised antennas and will be launching the new 'Sidekick' compact motorised antenna at Donington to sell at £259. British company **bhi** will be demonstrating their range of products including their new retro-fit DSP modules on the W&S stand and then lecturing on DSP both days. Two new antenna tuners from **LDG Inc** will be on display, including the **AT-897** (below, left) at £229, a new tuner designed for use with the Yaesu FT-897. There will also be new products from **MFJ**, **Watson**, **Optoelectronics** and **SGC** on the W&S stand plus new noise-cancelling headphones from **Heil** and antennas from **Diamond**. W&S hope to have their new bigger than ever **2004 Product Guide** on sale at the show.



YAESU

Yaesu has two new products being launched at Donington. The **VX-2R** (left) is the world's smallest dual-band hand-held with wide-band receive.

With 1.5W output on 2m and 1W out on 70cm from the internal Lithium-Ion battery pack (3W/2W out from

6V DC power source), the VX-2R covers medium-wave and short-wave on AM, VHF/UHF TV bands and the airband on receive. The **FT-8800** is a new dual-band mobile, with 50/20/10/5W power output levels on 2m and 35/20/10/5W out on 70cm. The FT-8800 is, in effect, two radios in one; either 2m or 70cm can be selected as the 'main' band with simultaneous monitoring of the other band possible.

RSGB

The RSGB will have a large stand at Leicester with its usual well-stocked bookstall. The Society will be launching its new **2004 RSGB Yearbook**, which this year is once again bigger and better than ever. For those who prefer to search for information electronically, the 2004 **Callseeker**, contain-



ing the same information as the *Yearbook* but on a CD-ROM, will also be available at Leicester for the first time. Finally, the third new product to be launched at the show is the 2004 RSGB **Deluxe Log Book**. See the Book Review on page 25 for more details on these best-sellers.

The RSGB's mobile amateur radio demonstration vehicle, **GB4FUN** (above), will be visiting the Leicester Show. You'll be able to visit this valuable resource and see how amateur radio can be demonstrated to schools and events open to the general public. Contact RSGB HQ for details of how **GB4FUN** can be booked.

ICOM

Take a look at the new **IC-703** (below) on the Icom stand. This new 10W HF/6m transceiver is ideal for the Foundation Licensee and, with its low power consumption, all those who wish to operate portable from batteries. Look out for a full technical review and a 'portable field test' of the IC-703 in *RadCom* next month!



VANN DRAPER ELECTRONICS

For the first time in several years **Vann Draper Electronics Ltd** will be exhibiting at the Leicester Show. On display will be a wide range of test and measurement instruments including multimeters, signal generators and power supplies. Of particular interest should be the recently introduced low cost range of **Digimess oscilloscopes** starting at just £99.00. In addition to test instruments the full range of soldering stations and accessories will also be available on the stand along with numerous other products of special interest to the electronics enthusiast. Special 'on the day' prices and stock clearances ensure customers a worthwhile visit to the stand.

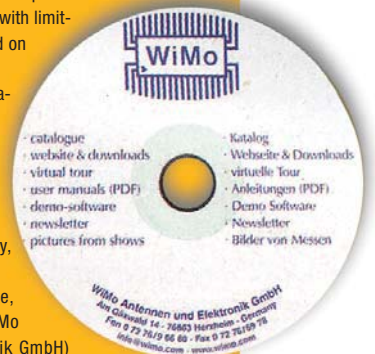
NEVADA

Nevada should be launching several new products at the show, including the **Trident HFV2 40m vertical**. This is a helical fibreglass antenna resonant on the 40m band. It is 5.6m (18' 4") long when assembled and just 2.3m long for easy transport when wishing to operate portable. It weighs just 3.5kg and will handle up to 1kW of power. Priced at £139.95 the antenna is ideal for those wishing an impressive signal on the 40m band with limited space. It may be used on other bands with an ATU depending on the installation.

WiMO ANTENNA LTD

Well-known in Germany, but a newcomer to the UK amateur radio scene, **WiMo Antenna Ltd** (WiMo Antennen und Elektronik GmbH) of Herxheim, Germany, has booked a

large stand in the centre row at Leicester alongside major traders such as Icom, Kenwood, Yaesu and the RSGB. WiMo provides all kinds of antennas and accessories, RF connectors, transceivers, power supplies, Morse keys, low-pass filters etc. No fewer than six representatives are coming over from Germany especially for the show.





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By John W Gould, G3WKL (Chairman, RSGB 5MHz Working Group),
Pathways, 116 Wolverton Road, Newport Pagnell, Bucks MK16 8JG.

The 5MHz Experiment:

ONE YEAR ON

Access to the 5MHz 'band', as some call it, was granted in August 2002 following discussions between the RSGB, Radiocommunications Agency (RA) and the Ministry of Defence (MoD), the primary user. The concession enables UK amateurs to undertake experiments during the declining sunspot cycle until the end of July 2006. Over 800 licensees applied for the necessary Notice of Variation (NoV) to their licence before the RA stopped issuing them last November in order to review usage and the needs of the ongoing experiments. Whilst the number of NoVs issued might not appear to be a problem, it should be remembered that if there was a requirement for the MoD urgently to revoke NoVs the administrative task to contact holders does increase directly with the number of NoVs issued!

The RA's conclusion will not be a surprise to the experimenters on 5MHz, as it was clear that increased activity was needed to realise the

potential of the experiment. Thus, discussions between the RA and RSGB took place on how to get more of the existing NoV holders operational and how to encourage additional active experimenters to move to 5MHz through a resumption of the issuing of NoVs.

This article summarises some of the experiment's initial findings, restates the aims of the experiment and provides an update for those wishing to participate, including those not wanting or able to transmit on the channels.

THE 'FIVEMEGS EXPERIMENT'

Radio amateurs often exploit anomalous propagation, sometimes with amazing results. However, the case for experimenting was to understand the *reliability and predictability* of 5MHz, relative to our existing heavily-used allocations at 3.5 and 7MHz, for inter-UK operation between temporary/portable stations. Such links become of interest in the public service context where amateurs support local events, emergencies or disaster relief through organisations such as Raynet [see also page 34 – Ed]. Whilst extensive use of VHF and UHF is made for these purposes, it was thought worthwhile revisiting the potential for HF to provide links, particularly from more rural and/or hostile areas of the UK.

I would apply caution to the view that the experiments on 5MHz, and the recent access given to US amateurs after 14 years of negotiation, is an indication that UK amateurs will eventually have long-term access to 5MHz. For exactly the same reason as us, the MoD greatly values the reliability and predictability of short- and medium-distance HF links in the region of 5MHz. However, a properly-conducted experiment and dis-

ciplined access to 5MHz will enhance the good reputation we have with other spectrum users. That cannot do us any harm and could in future help open parts of the spectrum to us for limited or specific usage such as the public service/emergency communications already mentioned.

As part of the 5MHz Experiment, Raynet Groups have been busy experimenting with 5MHz and VHF/UHF linking, particularly in mountainous terrain such as the English Lake District. The links have proved very successful during Public Service events in these areas. Additionally, the Raynet HF Team conducts a broader range of experiments during their rolling seven-day cycle of Inter-UK nets [1]. UK amateur access to the 5MHz channels has also uniquely allowed inter-operation with military cadet stations. The cadets often have limited time during their parades in which to operate, but their presence adds a further dimension to the experimental nature of the 'band'.

The 'Fivemegs Experiment' was the title given to the experimental activity planned when we first had the allocation. The concept was that amateurs would log QSOs and SINPO signal reports with other UK amateurs and cadet stations. Data from the logs would be combined to produce a huge database that, using a mining metaphor, experts could 'mine' to extract the 'nuggets' of information about 5MHz propagation, aerial performance, etc. Some amongst you will recognise that this type of experimental method, popularised by the BBC's 'Megalab Experiment' in 1999, requires a large amount of data and some restriction on the number of variables for the results to be of value.

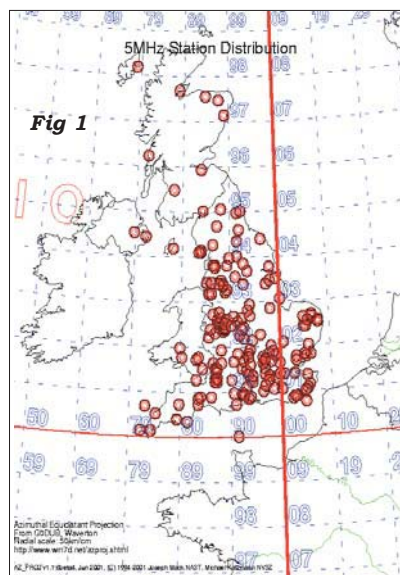


Fig 1: Geographical distribution of 5MHz NoV holders logged in the experiment.

The 5MHz Experiment: ONE YEAR ON

ANALYSING THE DATA

Earlier this year the RA kindly arranged for a few days of effort at the Rutherford Appleton Laboratory (RAL) to analyse professionally the structure and quality of the data. Some 15 logs with QSOs involving 224 different stations were analysed. Whilst the number of logs was disappointing, surprisingly they gave a lot of information and indicated how quickly the database would 'mushroom' if more participants sent in logs. There were a few errors, some of which we were able to spot and correct, others we may have generated ourselves during the laborious task of entering the data into the computer database. This gave us plenty of ideas for improving the station logging and computer transfer operation that are detailed in the new Operating Guidelines [2].

Fig 1 shows an interesting graphic of the distribution of NoV holders logged during this initial batch of data (the stations in the sea are presumed to be QTH Locator logging errors that we can eliminate later!) RAL's analysis was comprehensive and showed, for example, that 68% of the QSOs were over a path length between 100 and 400km and that 45% of the contacts were between 2.00 and 5.00pm. Interestingly, the number of daily contacts was roughly constant, showing little preponderance for weekdays or weekends (which was good!)

THE SINPO CODE

A more mathematical aspect of the analysis identified the need for better use of the SINPO code, Table 1. Whilst one would expect the Signal (S) report to be closely related to Overall (O), Interference (I), Noise (N) and Propagation (P) should have been more independent of each other and of S or O than was the case. With the threat of Power Line Telecommunications and other man-made 'pollutants' to the HF spectrum in mind, the 5MHz Working Group (5WG) debated the

| | 1 | 2 | 3 | 4 | 5 |
|----------|----------------|--------|----------|--------|-----------|
| S | Barely audible | Poor | Fair | Good | Excellent |
| I | Extreme | Severe | Moderate | Slight | Nil |
| N | Extreme | Severe | Moderate | Slight | Nil |
| P | Extreme | Severe | Moderate | Slight | Nil |
| O | Barely audible | Poor | Fair | Good | Excellent |

Table 1: SINPO code (originally CCIR Recommendation 251).

| | 1 | 2 | 3 | 4 | 5 |
|--|---------------------|------------------|------------------|------------------|-------------------|
| Signal | S2 or below | S3 or 4 | S5 or 6 | S7 or 8 | S9 or above |
| Interference (QRM) | S9 or above | S7 or 8 | S5 or 6 | S3 or 4 | S2 or below |
| Noise (QRN) | S9 or above | S7 or 8 | S5 or 6 | S3 or 4 | S2 or below |
| Propagation disturbance (Fading or Multipath/Doppler) | QSB > 6 S points | QSB = 6 S points | QSB = 4 S points | QSB = 2 S points | No QSB |
| Overall (QRK) | Extremely difficult | Poor | Medium | Good | Excellent quality |

Table 2: Interpretation of the SINPO code. In assessing 'P' one will have to take the most predominant effect from the Fading and Doppler options and score accordingly.

need to continue with SINPO and decided that it should be retained, but guidance given as to its interpretation, see Table 2. In passing we also debated the thorny question of whether to continue to record 'received' as well as 'sent' SINPO and concluded that until more stations submitted logs we would be missing much of the essential data required for the experiment by eliminating the logging of 'received' SINPO. It may be a bit tedious, but please persevere!

The quality of the overall result from the experiment will be dependent on the number and 'spread' of QSOs logged and analysed. By 'spread' we mean a variety of path-lengths, dates, times etc. Assuming that in part the experiment is aiming to produce a mathematical model that would allow us to predict the performance of a path of a specific length across the UK at any date/time in the future, a target of many tens of thousands of QSOs will be needed in the database. Whilst this is a large task, it is not impossible. Thus, as well as updating the experiment's Operating Guidelines and improving the Station Logging form, we have also decided to extend the experiment by introducing a beacon and also, with the RA's agreement, an announcement soon on the release of further NoVs.

5MHz BEACONS

With the RA's and MoD's approval and strict controls we can operate up to two unattended beacons on the designated channels. A measurement of signal and noise is fundamental in assessing the quality of service of any path. Thus, the beacon will provide a regular transmission with a stepped output power for quantitative assessment of S+N/N as well as 'no reception' reports. The latter is important, since knowing when the band is closed on a particular path

is as significant as knowing when it is open. Some amateurs may experiment with automating this reception process, which would greatly improve the quality and quantity of data. In addition, the beacon is designed to carry a short noise-like data sequence for observers equipped with special hardware and software to study Doppler and multipath delays. Proper measurement of these delays will increase our understanding of the overall quality of high-speed data links on 5MHz ionospheric paths. Eventually we hope to have a pair of beacons on the same frequency, employing an interleaved time sequence, at each end of the UK.

The 5WG would like to see the 500 or so NoV holders not so far logged on its database become more active. This is particularly important if their station is in a less-populated locator square, see Table 3. In order to stimulate further activity the RSGB and RA agree that further NoVs should be issued but only to those applicants who can demonstrate sufficient intent to actually operate on the band and either participate in the general experiment or have clear plans for some alternative experimental activity that is within the conditions of the NoV. In issuing new NoVs emphasis will be given to applicants who are able to operate regularly from one of the less-populated locator squares. However, applications will only be considered from holders of a UK 'full' amateur licence, for which this privilege of operating on 5MHz is reserved.

I would like to thank the RA and RAL for their initial analysis and also acknowledge Yaesu (UK), SMC, GOMJW, G3PLX and G4JNT for their support for the beacon project. Finally, I would like to thank my colleagues on the 5WG for their help and suggestions made in preparation of this article. ♦

Below: Table 3: Distribution of stations logged into the experiment's database

| | | | |
|----------|----------|-----------|-----------|
| IO69 - 0 | | IO89 - 0 | IP90 - 0 |
| IO68 - 1 | IO78 - 0 | IO88 - 0 | IO99 - 0 |
| IO67 - 0 | IO77 - 3 | IO87 - 3 | IO97 - 0 |
| IO66 - 0 | IO76 - 0 | IO86 - 0 | |
| IO65 - 0 | IO75 - 1 | IO85 - 3 | IO95 - 6 |
| IO64 - 2 | IO74 - 3 | IO84 - 5 | IO94 - 6 |
| | IO73 - 0 | IO83 - 16 | IO93 - 10 |
| | IO72 - 0 | IO82 - 14 | IO92 - 15 |
| | IO71 - 1 | IO81 - 15 | IO91 - 33 |
| | IO70 - 0 | IO80 - 4 | IO90 - 8 |
| | | | JO03 - 1 |
| | | | JO02 - 14 |
| | | | JO01 - 12 |
| | | | JO00 - 4 |

WEB SEARCH

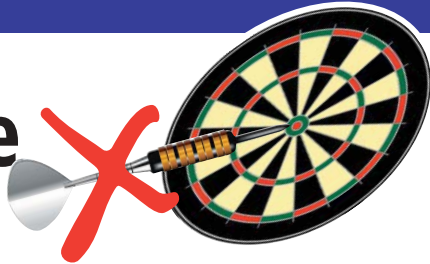


- [1] Raynet HF team www.raynet-hf.net
- [2] 5MHz Operating Guidelines and Station Log: www.rsgb-hfc.org.uk/5mhz.htm (follow link)



...ALL AMATEUR RADIO CLUBS AND INDIVIDUALS

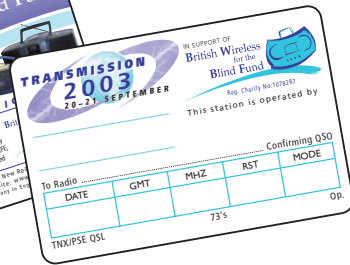
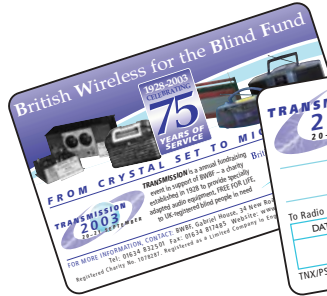
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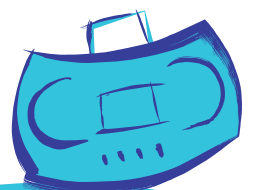
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The late Steve Jacobson, N2SJ, in front of the WPIX-TV master antenna on top of the World Trade Center and surrounded by a field of other communications antennas (no – they’re not scaffold poles!) Steve was the transmitter engineer at WPIX-TV sited at the top of the building, and perished in the 9/11 atrocity.



Raynet assisting in communications in the Liverpool International Half-Marathon.

Raynet

Amateur Radio Emergency

Be Prepared and Keep Prepared for an Emergency' was the message on the back of the early Raynet membership application forms. I was reminded of this recently in an e-mail from RSGB Honorary Vice-President Doug Willies, G3HRK, one of the original committee formed by the RSGB Council in 1953 to initiate the Radio Amateur Emergency Network, or RAEN as it was then called. Now, not only natural disasters – such as the 1953 floods that led to the formation of Raynet, as chronicled by Gordon Adams, G3LEQ, in 'Save Our Souls?' [1] – but also terrorist acts threaten us.

DEPENDENT ON INFRASTRUCTURE

The above message is as true now as it was then. Ah, I hear you say, but today's communications are so sophisticated, you can communicate from anywhere. Yes, you may be able to, but it comes at a price – *infrastructure*. Take that away and your mobile or sat-phone can't communicate directly. Terrorist activity as well as physical damage can also take the form of cyber-terrorism and/or attacks on power grids. You don't just need terrorist activity either: cut through a cable that is marked on official plans as supposedly 'unused' or have a telephone exchange failure and you would be amazed at the havoc wreaked – private wires to emergency services cut, putting transmitter sites off air and losing incoming 999 calls, resulting in a fallback to mobile phones with resultant overload. What was one of the steps taken? Raynet was called upon. The Staffordshire Ambulance Service exchange line failure in 2000 and Southampton exchange failure in 2002 are two instances in point. Yes, it does happen.

During the horrendous events of September the 11th, as the Twin Towers disappeared so did a substantial section of communications infrastructure, because it was sited atop these buildings. So too did the City of New York's Office of Emergency Management, housed on the 21st and 22nd floors of the World Trade Center. At the three terrorist atrocity sites, New York, the Pentagon and Western Pennsylvania, one communications factor was common – landline and mobile phone systems were overloaded and, in some cases, destroyed.

The subsequent amateur ra-

dio emergency communications response involved the US 'ARES' and 'RACES' groups – the equivalent of our Raynet – plus amateur radio clubs, repeater groups, specialist groups and individuals. VHF, UHF, HF, repeaters (standalone and linked) and the Internet were used, in fact very many people and aspects of the hobby contributed. Amateur radio emergency communications groups undertook the core activities, but they were supported technically and administratively by other sections of amateur radio. It is estimated that in the first two weeks in New York alone over 500 amateurs were tasked, amateur radio emergency communications support being required for over a month [2].

What is the lesson here? Surely it is that *everyone* with an interest in amateur radio can potentially assist amateur radio emergency communications? This aspect of the hobby, although considered by some to be a specialist interest – to put a perspective on it, there are around 200 Raynet Groups in the UK and just over 460 radio clubs [3] – is almost unique in that it embraces practically every other special interest in amateur radio to some extent. Moreover, it offers the ultimate challenge in communications: not just making contact and exchanging basic details, but sending and receiving accurately messages generated not by one's self, but by a third party. Providing emergency service in a major incident, emergency or disaster gives the satisfaction that you have played your part in achieving humanitarian relief.

DEFENDING OUR HOBBY – IMPRESSING OUR COMMUNITIES

Amateur radio emergency communications plays a vital role in justifying our use of amateur allocations, and the Amateur Service itself, at a time when there are increasingly heavy demands for spectrum space. Whilst the provision of future RF engineers, education, experimentation and propagation study is very important, amateur radio emergency communications offers the opportunity for *everyone* to participate *now* in the defence of our hobby and to show our usefulness to the community.

Mindful of the foregoing, the RSGB under its new Board structure allotted a portfolio to Emergency Communications (this currently being assigned to Board member Gordon Adams, G3LEQ) and one of its

first actions was to institute a review of Raynet and amateur radio emergency communications in the UK, inviting contributions from Raynet Groups, organisations and individuals alike. This took place in the Spring of 2002 and the ensuing review document ran to 18 pages (not including the correspondence appendices). The matter took two Board meetings to discuss and the Board agreed on an action plan covering the main points highlighted by the review. The Board also considered how best to communicate the concept of amateur radio emergency communications to the media and general public. Whilst 'Raynet' might be a household word to radio amateurs and the User Services, this is unlikely to be the case with the general public (stand in your high street and ask passers-by what the word 'Raynet' means, then try the same with 'St John's' or 'Red Cross'). After some deliberation, the Board decided that when describing activities undertaken by Raynet Groups, they would use the term 'Radio Communications Voluntary Services' or 'RCVS' for short. Some Groups and individuals expressed concern, in that they thought that this replaced the 'Raynet' name. It does not. The name Raynet remains in exactly the same manner as it has done for the last 50 years. The term RCVS is meant to reflect both the emergency and community/public service aspects of Raynet, plus its voluntary status. 'Radio Communications' is synonymous with other RSGB activities, such as the new 'Radio Communications Foundation' to address the needs of educating young people about amateur radio and of course the magazine you are reading now – *RadCom* – is an abbreviation of *Radio Communication*.

'Radio Communications Voluntary Services' also has the advantage that it can be used to describe the wider area of the hobby in supporting UK amateur radio emergency communications with Raynet as its core (see Fig 1). Following the action plan, the Board's first step was to appoint me as the RCVS National Co-ordinator and I commenced work on these points. The most visible you will see are the new RSGB

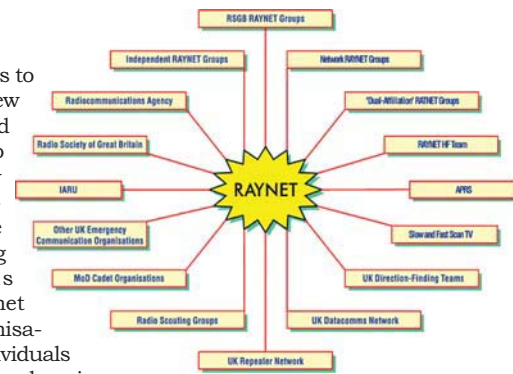


Fig 1: The Radio Communications Voluntary Services (RCVS) concept.

"Be Prepared and Keep Prepared for an Emergency" – as true now as it was then.



Today

Communications Still has a Role to Play



The old Radio Amateur Emergency Network manual.

Emergency Communications webpages (see **Fig 2**) and the Raynet 50th Anniversary Emergency Communications Convention which will take place in Birmingham on 25 October. Liaison with our companion organisation, The Radio Amateurs' Emergency Network ('The Network' – also affiliated to the RSGB) takes place on both a day-to-day and long-term basis. My position also acts as a central point for any queries concerning amateur radio emergency communications, whether from Raynet Groups of any (or no) affiliation, individuals, User Services, those wanting to become involved or merely requesting information. If required, enquirers are put in touch with the most appropriate individual, group or organisation. Raynet Talkthrough Permits for RSGB and Independent Groups are also dealt with (Network Groups have their own arrangements). The aim is, through enabling strategies, to give Raynet Groups the tools to do their job.

HOW CAN I HELP?

There are various ways in which you can help Raynet and UK amateur radio emergency communications:

As an individual:

If you feel you'd like to become involved with amateur radio emergency communications on a regular basis, you need to join a Group specialising in this – a Raynet Group – as it's all teamwork. You could look on the 'Raynet Group Listing' page of the RSGB Emergency Communications webpages and find a Group near to you, then contact them and arrange to meet. Groups usually suggest that you come along to a few events and see how things go, then, if everybody's happy, carry on and join.

I have had a lot of enquiries recently from Foundation (M3) Licensees and Raynet Group Controllers as to what extent Foundation (M3) Licensees can become involved with Raynet activities, their licensing regulations not allowing them to handle third-party messages on behalf of the User Services. The view of the Radiocommunications Agency (RA) is that they see Foundation Licensees as an asset to Raynet and they may pass third-party messages on behalf of the User Services *but not under their own M3 callsign*. They are allowed to pass third-party User Service messages under the direct supervision of a Full licensee and so will be using the callsign of this person. In practice, this will usually result in the Foundation Licensee being placed with another Raynet operator holding a Full licence, so that the Foundation Licensee has the dual benefit of both actively passing messages and the experience of the other Raynet operator he/she is assigned to. There is a continuing dialogue in progress with the RA over this aspect of the Foundation Licence. Of course if you're not handling third-party messages, your normal Foundation licence regulations apply. You do not necessarily need to have an amateur radio licence to be a member of Raynet – there are often

plenty of jobs that non-licensed persons can do and you may get experience of radio by using a PMR-446 licence-free radio, for instance.

When you join a Group, you are issued with an ID card, in order that you can be identified by the User Services as a member of Raynet. Groups also have public liability insurance to cover their members whilst involved with the Group's tasks. Groups undertake training and also participate in User Service exercises from time-to-time. Providing public service/safety communications for community events, such as walks, runs, bike rides etc provide a potentially non-emergency but 'live' opportunity for message-handling and User Service interaction.

If you can't find a Group near you, e-mail the Radio Communications Voluntary Services (RCVS) National Coordinator, Paul Gaskell, at rcvs@rsgb.org.uk and we'll try and sort out a solution for you.

If you are unable to be involved on a regular basis with amateur radio emergency communications, but want to help and have a skill that you feel might be useful (particularly technically), again contact the RCVS National Coordinator and I can put you in touch with Groups in your area who might welcome your expertise.

As a radio club, repeater group etc:

Radio clubs and repeater groups often have considerable expertise and equipment which would be of benefit to Raynet Groups in certain circumstances. It works both ways and they could be potentially new club members. Often Raynet members are club members and support is mutual. This is obviously most praiseworthy, but think of the potential if every club did this! Repeater groups can especially assist by making their repeaters available in times of emergency and occasionally for exercises. Much use is made in the US of linked repeaters to provide wider area coverage and this has proved particularly valuable in emergencies. Though not extensively tried up to now in the UK, it is certainly worth implementing in an emergency or similar exercise, ie having the potential to do so if required. Likewise, other special interest groups, such as fast or slow-scan TV and data can contribute to enhancing emergency communications and strengthening Raynet's abilities. In fact, as can be seen from the RCVS diagram, practically every aspect of the hobby can play a supporting role from time to time.

Generally:

If you have any spare equipment that is gathering dust, why not consider donating it to your local Raynet Group? Likewise, you can inform them if you know of any equipment that is likely to become redundant in the near future.

FINDING OUT MORE

A short article such as this can only hope to touch on a limited number of aspects of Raynet. For more information, visit the RSGB Emergency Communications webpages. The 27-page area, which is regularly being added to and updated, is designed to be viewed by a wide cross-section - from casual surfers, those wanting to become involved, through to Raynet members and controllers, User Services and other international amateur radio emergency communications groups. It has a number of information areas and is intended to complement and provide links to existing emergency communications websites. What we would particularly like to know is what information Raynet groups and members would like to see on the site that they think would be useful for their activities. After all, the most important person in Raynet is the member – without them nothing could happen! The 'Emergency Communications' section can also be reached from a link on the RSGB home page. If you do not have Internet access, write to the RCVS National Coordinator, c/o RSGB HQ.

Raynet has formed an intrinsic part of amateur radio for the last 50 years, during which time it has both rendered humanitarian assistance by practical use of the privilege of radio communications our hobby gives us and it has been a tangible 'shop window' of our hobby. It is an aspect of the hobby that the general public and the media can readily appreciate, showing us in a very positive light.

As Raynet looks towards the next 50 years, all manner of new, rapidly-changing technologies are upon us. How will Raynet utilise these to enhance its facilities and retain its flexibility to cope with future emergencies? We may gain an insight into this in future editions of *RadCom*.

Thanks to Michael Fenichel, KB2OLW, for permission to use his photograph of Steve Jacobson, N2SJJ, on the Twin Towers. ♦



Fig 2: The RSGB Emergency Communications webpages.

REFERENCES

- [1] 'Save Our Souls?' by Gordon Adams, G3LEQ, *RadCom* March 2003 p32.
- [2] '9/11/01: "This is Not a Test"', Rick Lindquist, N1RL, and Diane Ortiz, N2D0, *QST* November 2001 p.28 and 'Dedication to Emergency Service; 9-11-01', edited by Rick Lindquist, N1RL, *QST* April 2002 p28.
- [3] RSGB Emergency Communications webpages and RSGB Yearbook (available from RSGB Sales).

WEB SEARCH

| | |
|---|--|
| RSGB Emergency Communications webpages | www.rsgb.org/emergency/ |
| RSGB Home Page | www.rsgb.org |
| The Radio Amateurs' Emergency Network ('The Network') | www.raynet-uk.net |
| Web download of the QST '9/11/01 "This is Not a Test" article | www.arrrl.org/FandES/field/WTC.pdf |
| ARRL Home Page | www.arrrl.org |
| Michael Fenichel, KB2OLW (Steve Jacobson in memoriam) | www.fenichel.com/N2SJJ.shtml |




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AR Emercomms – A View from the User Services’ Side

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HF

Right: A new station in the country for top Swedish DXer and contester Håkan 'Hawk' Eriksson, SM5AQD. Two rotating towers, one 140ft and one 100ft, with giant rotators built by SM4CJM (pictured) and bolted into the living rock, were put up in the summer.

As expected, summer F2-layer propagation was rather patchy on the high bands, though there was some good DX at times on 15m. For example, I note a CW contact with FO/G35WH (French Polynesia. And, yes, there was a 'typo' on Phil's FO licence so to be on the safe side he signed what the licence said!), at 1920UTC beaming over the USA, and a huge SSB signal from another Phil, 9M6CT (East Malaysia), a couple of hours earlier in the day, beaming to SE Asia. That said, though, the weekend of the IOTA contest was rather disappointing, with very little happening on 10m and, on the Sunday morning, even 20m failing to get going until almost the end of the contest.

There does appear to be a problem with band occupancy at times, though. On several occasions I heard DX stations appear on 12m, 7P8IZ and KP2/AA1BU being good examples, with good signals, and the band would suddenly erupt with callers, most of whom were perfectly audible here in the UK, whereas five minutes earlier the band had appeared to be dead. On one of these occasions I then made several CQ calls myself, but with no response. It's fine waiting around for DX stations to appear but, of course, the old adage of 'use or lose' applies. During the last sunspot minimum 10m was encroached upon more and more by illegal local nets in a number of parts of the world, and they caused severe disruption to amateur traffic when the sunspot peak returned. This will undoubtedly happen again this time round, but less so if we make good use of the band ourselves.

CW RIP?

As expected, the move to abolish the mandatory Morse code requirement is now a *fait accompli*. To my mind this is entirely logical. My understanding has always been that the requirement existed because we used to share many of our HF bands with commercial users who, often as not, used CW. It was necessary that, in



cases of interference from amateur signals, they could ask the amateur concerned to move frequency, with a reasonable expectation that he would actually understand the request! With no remaining commercial users of CW, the requirement had become an anachronism.

That said, Morse remains an excellent communications mode for DX working, especially with low power, with many tens of thousands of adherents world-wide. If anything, I am hoping that the removal of the mandatory aspect will actually encourage many to use Morse because they *want* to, rather than see it as some sort of hurdle to be overcome and then forgotten. Like any skill, whether learning a language or playing a musical instrument, there's only one way to improve your Morse, and that's to use it, preferably in on-the-air QSOs. Most CW operators will be happy to adjust to your level of speed and proficiency and help you along.

Incidentally, it's noteworthy that the number of CW entries in most major contests has been increasing more quickly than those for SSB operation. Maybe this is because you can be more competitive on CW than

on SSB with a similar station, though in the G3XTT household it has as much to do with the fact that CW contesting doesn't disturb the rest of the family in the early hours whereas shouting "CQ Contest" on SSB is frowned upon!

DX NEWS

Michael, SV8/DF3IS, will be on **Thasos Island** (EU-174) 11 - 25 September, 40 - 10m CW and SSB. QSL via his home call.

John, G4IRN, will be active from **Mayotte** as FH/G4IRN from 16 to 23 September, 10 - 40m mostly on CW, using a vertical and 100 watts. *En route* there (13 to 16th) and back (23 to 27th) he will be active as S79IRN from the **Seychelles**. QSL via G4IRN.

DL7DF, DL7BO, DL7UFR, DL7KL, DJ6TF, DK1BT and DL4WK will operate from **Myanmar** (XZ) between 30 September and 17 October, signing XY7A. The team will have four stations at two different operating locations, one of which will be in the capital and the other on the coast. As usual the group will operate on all bands and modes, but with emphasis on the low bands. They have two linears, beams, a Titanex V80 vertical and

9 BAND TABLES NO 47

| MIXED MODE | 1.8 | 3.5 | 7 | 10 | 14 | 18 | 21 | 24 | 28 | TOTAL |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| G3KMA | 255 | 302 | 329 | 322 | 334 | 329 | 335 | 323 | 332 | 2861 |
| G4BWP | 249 | 305 | 333 | 321 | 335 | 328 | 335 | 315 | 325 | 2846 |
| G3XTT | 235 | 281 | 318 | 285 | 334 | 315 | 333 | 298 | 314 | 2713 |
| GW3JXN | 192 | 259 | 296 | 287 | 328 | 319 | 321 | 297 | 305 | 2604 |
| G3GIQ | 152 | 246 | 303 | 264 | 334 | 318 | 333 | 307 | 328 | 2585 |
| G40BK | 184 | 233 | 282 | 287 | 330 | 308 | 319 | 302 | 301 | 2546 |
| G3SED | 234 | 263 | 294 | 278 | 314 | 294 | 301 | 273 | 287 | 2538 |
| G3TXF | 139 | 241 | 301 | 297 | 329 | 300 | 325 | 285 | 305 | 2522 |
| G3SNN | 174 | 238 | 285 | 227 | 333 | 291 | 324 | 278 | 305 | 2455 |
| G3TBK | 141 | 240 | 280 | 259 | 329 | 300 | 317 | 286 | 291 | 2443 |
| G3LAS | 120 | 209 | 257 | 271 | 319 | 305 | 317 | 299 | 301 | 2398 |
| G3YVH | 139 | 170 | 264 | 287 | 325 | 313 | 313 | 279 | 286 | 2376 |
| G3IFB | 63 | 226 | 288 | 249 | 327 | 253 | 307 | 253 | 287 | 2253 |
| GM3PPE | 148 | 210 | 254 | 264 | 320 | 266 | 278 | 241 | 228 | 2209 |
| G3VJP | 107 | 187 | 260 | 190 | 329 | 277 | 316 | 248 | 286 | 2200 |
| G4PTJ | 48 | 188 | 241 | 198 | 326 | 277 | 321 | 270 | 304 | 2173 |
| G3AKU | 115 | 170 | 242 | 253 | 302 | 268 | 276 | 266 | 276 | 2168 |
| G3KMQ | 60 | 214 | 267 | 214 | 325 | 251 | 282 | 259 | 249 | 2121 |
| G5LP | 75 | 228 | 283 | 227 | 312 | 246 | 286 | 187 | 253 | 2097 |
| GOJHC | 1 | 71 | 225 | 273 | 283 | 306 | 315 | 300 | 309 | 2083 |
| G3IGW | 129 | 198 | 320 | 242 | 289 | 246 | 264 | 134 | 237 | 2059 |
| G3VKW | 49 | 173 | 234 | 139 | 328 | 241 | 324 | 257 | 309 | 2054 |
| MOBEW | 67 | 128 | 215 | 199 | 281 | 244 | 275 | 230 | 265 | 1904 |
| G4NXG/M | 26 | 57 | 140 | 0 | 294 | 225 | 290 | 201 | 254 | 1487 |
| G4OWT | 42 | 87 | 181 | 94 | 307 | 112 | 296 | 97 | 268 | 1484 |
| G4WFO | 29 | 111 | 183 | 159 | 227 | 182 | 213 | 150 | 171 | 1425 |
| GOLRX | 4 | 105 | 127 | 0 | 241 | 66 | 260 | 82 | 234 | 1119 |
| G4FVK | 42 | 79 | 106 | 62 | 191 | 107 | 193 | 84 | 176 | 1040 |
| MMOBQI | 39 | 80 | 130 | 50 | 200 | 81 | 185 | 63 | 173 | 1001 |
| MOCNP | 10 | 70 | 126 | 9 | 252 | 94 | 173 | 78 | 130 | 942 |
| AVERAGE | 109 | 186 | 245 | 207 | 303 | 249 | 291 | 231 | 270 | 2090 |
| CW ONLY | | | | | | | | | | |
| G3KMA | 249 | 283 | 326 | 322 | 334 | 323 | 332 | 311 | 322 | 2802 |
| G4BWP | 228 | 237 | 307 | 320 | 306 | 308 | 311 | 284 | 267 | 2568 |
| G3XTT | 225 | 254 | 306 | 285 | 306 | 295 | 306 | 277 | 287 | 2541 |
| G3TXF | 139 | 237 | 299 | 297 | 324 | 298 | 320 | 284 | 295 | 2493 |
| GW3JXN | 189 | 235 | 283 | 287 | 314 | 305 | 309 | 275 | 278 | 2475 |
| G40BK | 176 | 217 | 275 | 287 | 311 | 295 | 297 | 284 | 285 | 2427 |
| GONXX | 177 | 239 | 282 | 294 | 300 | 292 | 278 | 269 | 270 | 2401 |
| G3SED | 233 | 248 | 289 | 278 | 287 | 264 | 266 | 227 | 226 | 2318 |
| G3YVH | 137 | 170 | 259 | 287 | 316 | 300 | 298 | 264 | 270 | 2301 |
| G3SXW | 96 | 209 | 265 | 269 | 318 | 289 | 303 | 260 | 285 | 2294 |
| GM3POI | 207 | 232 | 288 | 248 | 299 | 240 | 282 | 227 | 251 | 2274 |
| G3LAS | 119 | 153 | 239 | 271 | 282 | 284 | 289 | 264 | 267 | 2168 |
| G3AKU | 115 | 170 | 242 | 253 | 293 | 258 | 264 | 248 | 260 | 2103 |
| G5LP | 75 | 224 | 283 | 227 | 301 | 246 | 276 | 187 | 246 | 2065 |
| G3VJP | 106 | 150 | 249 | 190 | 301 | 254 | 287 | 222 | 254 | 2013 |
| G4PTJ | 46 | 140 | 209 | 198 | 268 | 254 | 288 | 247 | 262 | 1912 |
| G3VKW | 43 | 111 | 186 | 137 | 248 | 186 | 272 | 200 | 214 | 1597 |
| G4OWT | 34 | 81 | 154 | 94 | 239 | 75 | 238 | 71 | 209 | 1195 |
| G4WFO | 29 | 107 | 169 | 159 | 156 | 137 | 155 | 120 | 100 | 1132 |
| MMOBQI | 26 | 56 | 93 | 50 | 114 | 39 | 112 | 30 | 114 | 634 |
| AVERAGE | 132 | 188 | 250 | 238 | 281 | 247 | 274 | 228 | 248 | 2086 |

NEXT DEADLINE 8 October 2003. PREPARED BY G3GIQ henry@topdx.com 9 July 2003.

an R7 vertical. News, on-line logs and pictures will be available on DL7DF's web page.

Richard, DJ4OI; Andy, DL3GA; Markus, DL1IAN, and Joachim, DF6IC, plan to operate, possibly as FO/homecall/A, from Tubuai (OC-152), **Austral Islands**, from 18 September to 3 October. They will have two stations with beams and linear amplifiers and will be on 80 - 10m, SSB, CW, RTTY and probably other digital modes. QSL via home calls, direct or bureau.

Nando, IT9YRE; Alfio, IT9EJW, and Claudio, I1SNW, are planning an IOTA operation from a new one and a rare one in late September to early October. The islands concerned are Maria (OC-NEW), **Austral Islands**, and Hereheretue (OC-052), **French Polynesia**. They will leave Italy on 26 September and return on 16 or 17 October; plans are to spend at least two days on each island, depending on local conditions. They will operate as FO/home calls on SSB and CW with two transceivers, a vertical, a dipole and probably an amplifier. QSL via home calls. A web page is under construction.

Roberto, EA2RY, reports that a

group of three will be operating from **Guadeloupe** (FG) from 23 September to 9 October, including the CQ WW RTTY Contest.

SIX AND TEN REPORT

For many years now the RSGB's Propagation Studies Committee has been producing a monthly booklet reviewing propagation on the 10 and 6 metre bands. A modest charge is made towards the cost of printing and mailing, but it is now possible to download the report from the web (see 'Web-search' below) as a PDF file (requires Acrobat reader). A paper version will still be available (contact Steve, GOAEV QTHR or e-mail g0aev@explore.plus.com for details). The data gathered is based on activity reports but also on beacon monitoring and, referring back to some of my earlier remarks, it is always interesting to see how often on 10m there is propagation, with beacons audible, but little or no activity.

DXCC

The DXCC desk recently published a listing of 'Top of the DXCC Honor Roll' (Mixed, Phone and CW) and also

a listing of QRP DXCC award recipients on the DXCC homepage. Follow the appropriate links.

I am becoming increasingly selective about what awards data I publish, as it appears many clubs introduce awards for no other reason than to promote their club and/or raise money for club funds. Even awards launched with the best intentions can disappear into the abyss when a new committee takes over. Of course, this is less likely to be true where they are backed by an IARU society or other high-profile body.

CORRESPONDENCE AND TABLES

My thanks once again to Henry, G3GIQ, for the latest 9-band table. Do feel free to join in. There is no entry level as such, although you're probably not starting to get competitive until you have reached the 1000 or so level (which should be quite achievable in a year with 100 watts and a reasonable antenna system).

Ken, M3NPB, reports some nice contacts again, including TF3KX/1 (Iceland) who was running just one watt. Ken turned his own power down to match, and promptly went on to work OK1ACP (Czech Republic).

Rodney, G3NDI, sent a nice note, commenting that he is now active again after a break of some 15 years. He has bought an FT-847 to replace his ageing (but still working) KW2000A. On a recent family holiday to Wales, using a 40m length of wire at a seaside location, supported by bamboo canes just 8ft or so high, he was able to make good contacts around the UK and Europe on 80 and 40m, and particularly enjoyed a QSO with UU2JZA/MM on 20m. This was a Ukrainian training ship sailing to Kiel. As Rodney correctly notes, what might be an uncompetitive station from most locations can be very effective when next to seawater. Indeed, the 6Y2A contest team, who now hold most of the CQWW QRP (5 watt) contest records, have found during their various operations from Jamaica that the performance of their vertical antennas improves noticeably as they get closer and closer to the water's edge (they have the benefit of operating from a private beach - most beaches are public, so expedition stations often have to locate their antennas at the top of a beach rather than right next to the water).

W E B S E A R C H

| | |
|------------------------------|--|
| Bavarian Contest Club | www.bavarian-contest-club.de/wabcc |
| DL7DF | www.qsl.net/dl7df/ |
| DXCC Home Page | www.arrl.org/awards/dxcc/listings |
| EI8IC maps | www.qsl.net/ei8ic |
| FO trip by Italians | www.printed.it |
| Six and Ten News | www.6and10.org.uk |

And a letter from Bill, G4EHT, reports that he thoroughly enjoyed his operation as ZC4ESB from the Eastern Sovereign Base area of Cyprus earlier this year, while visiting his son ZC4DW. Bill thanks all those who called him and is delighted that a number of QRP stations were able to crack the pile-ups, which got a little unruly at times.

Finally, I have dropped from the annual table this month those who haven't updated since March. If you are still interested in participating, then drop me a line, even if it's a zero update, and you will be reinstated.

COMPUTERISED MAPS

Tim, EI8IC, reports that a demo of his extensive collection of computer image maps – Global Mapper – is now available at his website. There are continental and sub-continental maps, country outlines, zone maps, relief maps, grid and lat/long mesh-

es, plus hundreds of city and region names, IOTA information and flags, too. The nice thing about Tim's maps is that you can turn the layers on and off to control the level of detail.

PIRATED CALL

Robert, G4ACY, who operates only 20m, is receiving QSLs for contacts made on other bands by someone signing G4ACY/P or G4ACY/M. This has been going on for some time. I have never understood the mentality of those who do this and, indeed, the culprit often turns out to be another amateur, so it's not even someone who has failed to get a licence of their own.

SILENT KEY

International Red Cross aid worker Nadisha Yassari Ranmuthu, 4S7NR, from Sri Lanka was shot dead and his Iraqi driver wounded when their car came under fire south of Baghdad. He was first licensed in 1988. He leaves a wife Priyadarshi, 4S6CR, and daughter Kavisha. This is a reminder that many radio amateurs work in agencies such as the Red Cross and the UN, using their technical and communication skills to help others, and sometimes incurring a significant level of risk in the process. ♦

COUNTRIES WORKED, 2003

(sorted this month by CW totals)

| CALL | CW | SSB | DATA | MIXED |
|----------------|-----|-----|------|-------|
| G3SXW | 213 | 0 | 0 | 213 |
| G3XTT | 211 | 152 | 107 | 225 |
| G3TXF | 202 | 11 | 0 | 202 |
| G0NXX | 200 | 0 | 0 | 200 |
| G3YVH | 190 | 136 | 0 | 215 |
| G4WFO | 183 | 59 | 95 | 209 |
| G4KFT | 177 | 0 | 0 | 177 |
| G3VDL | 171 | 0 | 0 | 171 |
| G4IRN | 165 | 0 | 0 | 165 |
| G3ZRJ | 156 | 0 | 0 | 156 |
| G3LHJ | 155 | 58 | 85 | 174 |
| G4EDG (QRP) | 150 | 0 | 0 | 150 |
| G4WXZ | 147 | 140 | 0 | 192 |
| ZC4VG | 131 | 34 | 57 | 134 |
| G3YMC (QRP) | 131 | 0 | 0 | 131 |
| GMOTGE | 128 | 143 | 0 | 194 |
| G40BK | 127 | 20 | 61 | 138 |
| G4UCJ | 124 | 10 | 24 | 126 |
| GU4YOX | 121 | 123 | 0 | 167 |
| MUOFAL | 119 | 86 | 0 | 134 |
| MOBVE | 111 | 0 | 0 | 111 |
| ZC4DW | 85 | 71 | 74 | 116 |
| GW4ALG (QRP) | 65 | 0 | 0 | 65 |
| G4FVK | 57 | 91 | 0 | 102 |
| G4DDL | 55 | 7 | 21 | 59 |
| GMOELV (QRP) | 47 | 0 | 0 | 47 |
| M3NPB | 46 | 21 | 0 | 56 |
| MMOBQI | 27 | 28 | 81 | 100 |
| M5AEF (1 watt) | 27 | 52 | 0 | 59 |
| MOCNP | 12 | 137 | 39 | 138 |
| GIONQC | 1 | 70 | 69 | 102 |
| M3RDX | 0 | 170 | 93 | 187 |
| M3CLY | 0 | 152 | 0 | 152 |
| GOARF | 0 | 0 | 150 | 150 |
| GUOSUP | 0 | 0 | 116 | 116 |
| GOGFO | 0 | 115 | 0 | 115 |
| M5GUS | 0 | 115 | 0 | 115 |
| M5PLY | - | - | - | 105 |
| GOLGJ/M | 0 | 92 | 0 | 92 |
| G4ZPL | 0 | 2 | 87 | 87 |
| G4YWY/M | 0 | 69 | 0 | 69 |
| G3URA | 0 | 0 | 53 | 53 |

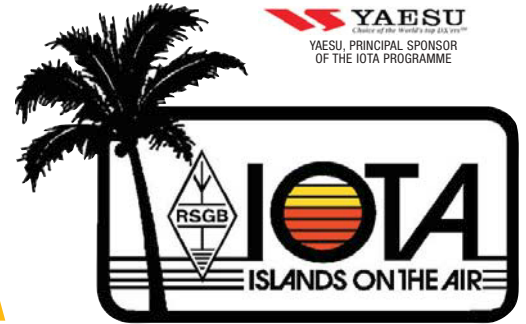
THANKS Special thanks go to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (1JQJ). Please send items for the **November** issue by **20 September**.

HF F-Layer, Propagation Predictions for September 2003

| | 3.5MHz | 7.0MHz | 10.1MHz | 14.0MHz | 18.1MHz | 21.0MHz | 24.MHz |
|----------------|--------------|--------------|--------------|----------------|---------------|--------------|----------------|
| Time | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 |
| (UTC) | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 |
| *** Europe | | | | | | | |
| Moscow | 72.....1356 | 76....16767 | .2....13664. | ..53334572.. | ...788987... |666..... | ..... |
| *** Asia | | | | | | | |
| Yakutsk | ..... | .....21. | 121...136775 | ..5434532... | ...555..... | ...14..... | ..... |
| Tokyo | ..... | .....13.. |123.. |1.. |1.. | ..... | ..... |
| Singapore | ..... | .....111. |1431. |352.. |1441. |121.. | ..... |
| Hyderabad | ..... | .....1 | 1.....3433 |2552. | ..2..15774.. | ..1223673... | ..22233... |
| Tel Aviv | 45.....1122 | 661....5666 | 8.5....37638 | ..342235727. |11.... | ..... | ..... |
| *** Oceania | | | | | | | |
| Wellington | ..... | .....15... |1125... | ...122212... | ..... | ..... | ..... |
| Well (NZ) (LP) | ..... | ..3..... | ..15..... | ..4.....1. | ..1..... | ..... | ..... |
| Perth | ..... | .....111. |1.. |11..... | ..... | ..... | ..111..... |
| Sydney | ..... | .....11.. |111.. |1.. |232.... |111.... |11..... |
| Melbourne (LP) | ..... | ..... | ..... | .....2..... | ..... | ..... | ..... |
| Honolulu | ..... | ..... | .....22..... |11..... | ..... | ..... | ..... |
| Honolulu (LP) | ..... | ..... | ..... | .....1..... |1..... |2..... |1..... |
| W. Samoa | ..... | ..... | .....11..... |1222..... |121..... |11..... | ..... |
| *** Africa | | | | | | | |
| Mauritius | ..... | 1.....111 |1221 |1321. |231.. |12... | ..... |
| Johannesburg | 35.....11 | 68.....6887 | 16.....7886 | ..2.....18862 | ..1.....2761. | ..1.....373. |3334671.. |
| Ibadan | ..... | ..1..... | 445....222 | ..71....121. | ..88422356.. | ..865556... | ..733344... |
| Nairobi | ..... | ..... | ..1..... | 11.....12 | ..2....1111 | ..41...121.. | ..122221... |
| Canary Isles | 232.....322 | 676....1656 | 6672....3566 | 3.5621124772 | ...7766777.. | ...7777778.. | ...1111121.. |
| *** S. America | | | | | | | |
| Buenos Aires | ..... | 435.....13 | 112....11 |1. | ...1....51. | ...21..14.. | ...1.1111.. |
| Rio de Janeiro | ..... | ..1....1. | ..1....11. |1. | ...11...171. | ...211136.. | ...11.122.. |
| Lima | ..... | ..... | ..... | ..... | ..2....11. | ...1...1. |1..... |
| Caracas | ..... | ..... | .....1..... | ..... | .....1..... | ...1...1. |11111.. |
| *** N. America | | | | | | | |
| Guatemala | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| New Orleans | ..... | ..... | 1.1..... | ..... | .....43234.. |15452.. |111... |
| Washington | ..... | 333.....2 | 525....15 |141 |33335.. |25553.. | ..... |
| Quebec | 44.....14 | 665.....67 |121 | ...1...12.. | ...53463.. | ..... | ..... |
| Anchorage | ..... | 11..... | ..1..... |11..... |1..... | ..... | ..... |
| Vancouver | ..... | ..... | ..... | ..... | .....22.. | ..... | ..... |
| San Francisco | ..... | ..... | ..... | ..... | .....111.. | ..... | ..... |

Key: Each number in the table represents the expected circuit reliability, e.g. '1' represents reliability between 1 and 19% of days, '2' between 20 and 30% of days, etc. No signal is expected when a '0' is shown. Black is shown when the signal strength is expected to be low to very low, blue when it is expected to be fair and red when it is expected to be strong. The RSGB Propagation Studies Committee provides propagation predictions on the internet at <http://members.aol.com/g4fkhgwyn>. The page is updated monthly. The provisional mean sunspot number for July 2003 issued by the Sunspot Data Centre, Brussels, was 85.0. The daily maximum / minimum numbers were 161 and 28 on 20 July and 26 July respectively. The predicted smoothed sunspot numbers for September, October and November are respectively: (SIDC classical method - Waldmeier's standard) 54, 53, 52 (combined method) 63, 61, 57. Longpath predictions are shown with (LP) following the path name. Higher input power and superior aeriels have been used for these predictions; less well-equipped stations may find the longpath predictions somewhat inaccurate.

IOTA



The 2003 Honour Roll and other performance listings have been posted on the IOTA Manager's website. Members interested who do not have access to the Internet will be able to see the full listings in hard-copy in the new 2004 RSGB Yearbook [to be launched at the Leicester Show on 19 September; orders being taken from 1 September, contact the RSGB Shop - Ed].

IOTA 1000 ISLANDS TROPHY

Top performers who have applied have now received the new IOTA 1000 Islands Trophy. This takes the form of an attractively produced diamond glass feature resting on a highly polished wooden base. This base is fitted with a metal plate, suitably engraved on the front with the holder's details, with space for eight metal mini-plates, two on the front, two on the sides, and four on the back, for 25 island group increments. See the picture alongside. The price is £55 plus

postage. Certificates will also be issued and these will be free of charge to those who request the trophy.

IOTA WEBSITE MAKEOVER

The main RSGB IOTA Programme website has seen a major redesign. A host of new features have been added. The main one is the inclusion of the IOTA Directory island listings online. You can now search the database by island name to check on island validity. Intending DXpeditioners should always do this if they do not have access to the latest hard-copy Directory since, if the island is not mentioned as counting either there or in the list of Additional Qualifying Islands on the IOTA Manager's website, it will not be valid.

The website offers a facility for searching the database by IOTA reference number for a list of qualifying islands. Access is currently restricted to members in the programme who have submitted a certificate claim, so, if you qualify, apply to your checkpoint for a username and password.

IOTA PARTICIPATION

We are often asked how many people participate in IOTA. It would be easy to say that, as starter 100 Islands certificates issued since the beginning of the programme number some 2400, the 'low thousands' would be a reasonably accurate indicator of current interest. That of course is very wide of the mark as anyone who listens regularly to IOTA pile-ups can confirm. The estimate ignores the very large number of enthusiasts who make efforts to work IOTAs but for various reasons do not submit claims. We know that many of these do not collect QSL cards and / or are not interested in certificates or performance tables, in some cases preferring to keep a personal tally on what their own score would be - the "I have worked it, I don't need proof" participants. And participants they most definitely are.

But that's not all. A major ingredient in any estimate must be the many thousand amateurs who get their pleasure from activating an island. Their interest is operating at the sharp end of a pile-up, in effect doing

exactly what Geoff Watts established IOTA to promote, the driving purpose of the programme (see July RadCom). Identifying the target IOTA, choosing the island, getting any licences and permissions required, organising the equipment, transport and accommodation, assembling a team or persuading family members to share their holiday, and then seeing the operation through, all taken together, make for undoubtedly the most effective form of participation in the IOTA Programme.

Our best estimate is that some 15,000 amateurs world-wide are actively pursuing the programme, either as certificate collectors, island activators, or reasonably serious 'closet' island chasers. Adding the many amateurs who will join an IOTA pile-up "because it's there and the most interesting thing on the band at the time" could double this figure. What is important in all this is that IOTA provides a significant boost to on-band activity, without which amateur radio could lose a lot of its appeal in an environment of so many other competing interests.

IOTA ON 6 METRES

A long time since mentioning 6 metres but there was very little to report prior to the onset of the Sporadic E season. Recent IOTA contacts for your columnist were FR1GZ (AF-016), IH9/IW9FMW and IH9/I2ADN (AF-018), 5B/G1JJE (AS-004), YM0KA (AS-099), ID9/IK2CHZ (EU-017), SM1TDE (EU-020), TF/G4ODA (EU-021), OZ4ADX (EU-030), SV8 DTD (EU-049), IF9MI (EU-054), LA8AV (EU-061), SY8FUO (EU-072), OH2AVP (EU-097), MU0FAL (EU-114), IM0/IZ0EJQ (EU-165), CU3EM (EU-175), V25XX (NA-100), KP2HC/KP2 and KP2A (NA-106) and FM5WD (NA-107). The score has now reached 88 IOTAs and with 50 in Europe the first IOTA certificate (IOTA-EU) can be claimed once the cards come in. ♦

Left: The new IOTA 1000 Islands Trophy.



NEW REFERENCES

| | | |
|-----------|-------|---|
| AF-093 | J5 | Guinea-Bissau Coastal Region group (Guinea-Bissau) |
| AF-094 | 7X | Mediterranean Sea Coast West group (Algeria) |
| NA-225/Pr | VY0 | Nunavut (Prince of Wales and Somerset Islands) group (Canada) |
| OC-262 | YB4-5 | Sumatra's Coastal Islands South (Indonesia) |

PR = PROVISIONAL

W E B S E A R C H

RSGB IOTA Programme
IOTA Manager's website
IOTA Contest rules

www.rsgbiota.org
www.eo19.dial.pipex.com/index.shtml
www.rsgbhcc.org/

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| FT-897 | £985.00 | TS-570DGE | £829.00 | IC-703 | £575.00 | DR-605 | £269.00 |
| FT-857 | £795.00 | TS-50S | £599.00 | IC-718 | £449.00 | DJ-G5E | £265.00 |
| FT-100D | £599.00 | TM-D700E | £429.00 | IC-2725E | £299.00 | DR-150 | £259.00 |
| FT-817 | £549.00 | TM-V7E | £375.00 | IC-207H | £275.00 | DJ-X2000 | £449.00 |
| FT-840 | £499.00 | TM-G707E | £279.00 | IC-2100H | £225.00 | DJ-X10 | £249.00 |
| FT-8900R | £339.00 | TH-D7E | £299.00 | IC-E90 | £269.00 | DJ-V5 | £239.00 |
| FT-7100M | £299.00 | TH-F7E | £249.00 | IC-T3H | £129.00 | DR-M06 | £229.00 |
| FT-2800M | £179.00 | TH-G71E | £210.00 | IC-R8500 | £1,199.00 | DJ-C5 | £189.00 |
| FT-1500M | £159.00 | RC-2000 | £199.00 | IC-R75 | £599.00 | DJ-195 | £159.00 |
| VX-7R | £299.00 | PS-52 | £229.00 | IC-PCR1000 | £329.00 | DJ-193 | £139.00 |
| VX-1R | £115.00 | PS-53 | £229.00 | IC-PCR100 | £229.00 | DJ-X3 | £115.00 |
| VX-150 | £110.00 | PS-33 | £199.00 | IC-R3 | £369.00 | DR-135 | £229.00 |
| VR-5000 | £549.00 | MC-60A | £110.00 | IC-R10 | £275.00 | DJ-496 | £175.00 |
| VR-500 | £199.00 | MC-80 | £69.95 | IC-R5 | £169.00 | EDX-2 | £299.00 |
| VR-120D | £159.00 | SP-31 | £82.00 | SM-20 | £125.00 | DJ-X2 | £165.00 |
| VR-120 | £139.00 | SP-23 | £68.95 | SP-21 | £69.00 | DR-140 | £219.00 |
| MD-200A8X | £225.00 | SP-50 | £27.95 | AT-180 | £329.00 | DJ-596 | £199.00 |
| MD-100A8X | £99.00 | YK-88C-1 | £61.95 | FL-100 | £59.95 | DJ-C1 | £99.00 |
| FC-10 | £299.00 | YK-88S-1 | £61.95 | FL-103 | £59.95 | DJ-C4 | £99.00 |
| FC-20 | £225.00 | YK-88SN-1 | £61.95 | FL-223 | £59.95 | DR-M03 | £239.00 |
| FC-30 | £229.00 | YK-88CN-1 | £61.95 | FL-232 | £59.95 | DM-330MVZ | £129.00 |



MFJ



| | | | | | | | | | | | |
|-----------|---------|---------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| MJF-16010 | £56.95 | MFJ-934 | £189.95 | MFJ-969 | £199.95 | MFJ-949E | £159.95 | MFJ-948 | £139.95 | MFJ-941E | £129.95 |
| MFJ-989C | £379.95 | MFJ-924 | £74.95 | MFJ-914 | £64.95 | MFJ-910 | £24.95 | MFJ-903 | £54.95 | MFJ-901B | £85.95 |
| MFJ-986 | £349.95 | MFJ-921 | £74.95 | MFJ-962D | £279.95 | MFJ-906 | £89.95 | MFJ-945E | £119.95 | MFJ-212 | £79.95 |

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Contest

Mike, G7LQD, operating as GW7LQD/P during a recent 144MHz Backpackers contest.

Happily we seem to have eliminated most of the backlog of results now which means that we can, once again, include write-ups for the majority of contests. Lee, GOMTN, writes, "The problem as I see it is that the results themselves are a mandatory requirement, but what is of most interest (and especially so to casual or non-contesters) is the commentary/pictures/write-ups which must take second place. There have been numerous debates over the years about only publishing 'top 10 results', or not publishing results, both of which are generally discounted. We must cater for the average stations and list them, as without all these guys there are no contests. Not publishing results is dangerous - we can't assume a 100% Internet connection for everyone who wants them (even considering using a friend's connection) - and as soon as RadCom space is given up, it was argued it would be difficult to get back.

"Also, with Don, G3XTT, having dropped mention of overseas contests from the 'HF' column, there will be more pressure on you to provide some results of the big international

contests. These have usually consisted of regular tables for CQ WW CW / SSB, CQ WPX CW / SSB, ARRL DX CW / SSB, ARRL 10m, IARU, CQ 160 CW / SSB, plus mentions 'in column' of results for two WAEs, four EU Sprints, and a multitude of others. I like seeing tables for these contests in RadCom - it acts a reminder for the contest for casual guys: 'lots of UK guys on, and some good scores - I might have a go next time'. Also, it provides a handy available source of the previous year's scores for potential entrants - and it does acknowledge the work and effort from our guys in doing well in these events too by getting #1 EU, or #3 World etc."

We viewed the removal of write-ups as very much a temporary measure and are very happy to plan to include them once again. Thanks, Lee, for your comments which are well made. It is difficult to find space for everything, particularly some of the international events,



but we will do our best to keep as many of you happy as possible.

GB5HQ - AFTER THE EVENT

Readers will remember the article from Dave, G4BUO, in the July edition of *RadCom* about the plans for running the GB5HQ station during the IARU contest. This was extremely successful resulting in about 12,800 QSOs being made in the 24-hour contest period. The team would like to thank the very many UK stations who made such an effort to work GB5HQ on the different bands and modes.

From a technical standpoint the project was challenging because we wanted to provide a data network between the stations. This allowed our logging software, Writelog, to share multiplier lists and direct stations to where to find us on other bands. Dave, G4FRE/WW2R, who was operating with Roger, GW5NF, and me at 28MHz SSB, commented that Andy, G4PIQ, sounded like an air-traffic controller because of the impressive and efficient way he was directing stations to different bands. A very enjoyable and rewarding event for everyone involved. Particular thanks to Dave, G4BUO, and Chris, GM3WOJ, for their considerable organisational efforts.

PACC 2003

From Harold, G2HLU, I received the results of the 2003 PACC event. UK scores were as follows: G results: (SO) GM3CFS 14560, G2HLU 12087, G0MRH 5250, MM0WPM 4495, GM3KLA 3745, G3VOQ (?G3VQO) 3200, G3RSD 3045, G0TTM 2484, M0AEK 2460, G3VAO 2271, G3VGR 2186, G0MTN 1728, G10OUM 260,

| Contest Calendar | | | | | |
|--------------------|-----------|--------|-------------------------------|---------|--------------------|
| HF CONTESTS | | | | | |
| Date | Time | Mode | Contest | Bands | Exchange |
| 1 September | 1900-2030 | CW | RSGB Slow Speed Cumulative | 3.5 | RST+First name |
| 6/7 September | 0000-2359 | SSB | All Asia SSB | 3.5-28 | RS+Age |
| 6/7 September | 1300-1300 | SSB | RSGB SSB Field Day | 3.5-28 | RS+SN |
| 9 September | 1900-2030 | CW | RSGB Slow Speed Cumulative | 3.5 | RST+First name |
| 13/14 September | 0000-2359 | SSB | Worked All Europe | 3.5-28 | RS+SN |
| 17 September | 1900-2030 | CW | RSGB Slow Speed Cumulative | 3.5 | RST+First name |
| 20/21 September | 1200-1200 | CW | Scandinavian Activity | 3.5-28 | RST+SN |
| 20/21 September | 1600-0700 | CW/SSB | Washington Salmon Run | 3.5-28 | RST+Country |
| 21 September | 1600-2400 | CW/SSB | Washington Salmon Run | 3.5-28 | RST+Country |
| 25 September | 1900-2030 | CW | RSGB Slow Speed Cumulative | 3.5 | RST+First name |
| 27/28 September | 0000-2359 | RTTY | CQ / RJ WW RTTY | 3.5-28 | RST+CQ Zone |
| 27/28 September | 1200-1200 | SSB | Scandinavian Activity | 3.5-28 | RS+SN |
| VHF CONTESTS | | | | | |
| Date | Time | Mode | Contest | Bands | Exchange |
| 2 September | 2000-2230 | Local | ALL RSGB 144MHz Activity | 144 | RST+SN+Locator |
| 6/7 September | 1400-1400 | ALL | RSGB 144MHz Trophy | 144 | RST+SN+Locator |
| 7 September | 1100-1500 | ALL | RSGB 144MHz Backpackers | 144 | RST+SN+Locator |
| 9 September | 2000-2230 | Local | ALL RSGB 432MHz Activity | 432 | RST+SN+Locator |
| 16 September | 2000-2230 | Local | ALL RSGB 1.3 - 24GHz Activity | 1.3-24G | RST+SN+Locator |
| 21 September | 0900-1300 | ALL | RSGB 2nd 70MHz | 70 | RST+SN+Locator+QTH |
| 23 September | 2000-2230 | Local | ALL RSGB 50MHz Activity | 50 | RST+SN+Locator |
| MICROWAVE CONTESTS | | | | | |
| Date | Time | Mode | Contest | Bands | Exchange |
| 21 September | 0900-2100 | ALL | 5th 10&5.7GHz Cumulative | 5.7/10G | RST+SN+Locator |
| 28 September | 0900-2100 | ALL | 47/76GHz | 24/47G | RST+SN+Locator |

GM4ELV (QRP) 140, MOZZO 25, (MO) GB5TT 3645.

CONTESTS THIS MONTH

September brings the onset of the autumn contest 'season'. The first weekend of the month, 6/7 September, brings SSB Field Day, one of the events where clubs have really benefited from the many keen and excellent Foundation Licensees who have swelled our ranks over the last 18 months or so. Many Foundation Licensees are becoming really excellent operators now and this is just the sort of event that might encourage them towards a full licence. So, please consider joining in this event as a club, if you can.

Again, for beginners, there are the Slow Speed CW Cumulative contests which are held on 1, 9, 17 and 25 September. Many older hands seem to support this contest, but an increasing number of new licensees do too. If you have the chance, try and come on and make a few contacts to support them.

As a RTTY contester, I look forward to the CQ WW RTTY contest on 27 / 28 September. If you haven't tried RTTY contesting, this is an ideal opportunity to download and install MMTTY on your PC to decode and log your contacts. Many expeditions are made, so it is an ideal opportunity to increase your RTTY scores. If you are not into data contests, your turn is not far away with the SSB event in October and the CW in November. Get those antenna projects underway now!

The 2003 Washington State Salmon Run will be held during the weekend of 20 / 21 September. This is the "legendary" contest that offers smoked salmon prizes. WA hams will be making a special effort to activate all 39 counties. Complete details are available at <http://www.wwdxc.org/salmonrun/>. Smoked salmon awards are given to the top score in each US call area and DX entity (plus lots of other "Special" prizes). So, there's a smoked salmon up for grabs in each of the UK DXCC countries. Go for it, and let me know what your salmon is like, if you're successful!

More in the mainstream are the All Asia SSB contest on 6/7 September, WAE SSB on 13/14 September and the Scandinavian Activity Contests on 20/21 September for the CW event and 27/28 September for the phone.

I am always sad when the final 144MHz Backpackers contest comes around (7 September) as it seems like summer is over! The 144MHz Trophy runs the weekend of 6/7 September and as ever is a golden opportunity to work some DX on the band. On 21 September, we have the 2nd 70MHz contest, which always breathes some life into an often under-used band. ♦

21/28 MHz CW, October 2002

The inevitable decline in sunspot activity gave way to poorer propagation for the 2002 contest. However, there was still an impressive amount of DX to be worked, including 7Q, A3, AH8, BY, CE, JY, KH6, VP8, VR2 and ZK. Only a small number of entrants worked a few of these countries, and no-one came close to working all of them, though! There was a pleasing number of QRP entries which also boasted some DX QSOs themselves. With changing propagation from year to year, a different winning strategy is required to maximise multiplier totals, if there is not a high volume of contacts available. The UK Open section winner is again Jan, G0VZ, although this year he was very closely followed by Steve, G0CKP. Jim, G3RTE, heads up the UK Restricted section, and Harold, G2HLU, wins the UK QRP section. Congratulations also to all of the Overseas sections winners, several of which are now many-time winners: Vladimir, 9H1ZA; Pandea, Y06MT; Rumen, LZ2RS; and Vladimir, UA3-170-847.

21/28 MHz CW Contest 2002

Lee Volante, GOMTN

| UK OPEN SECTION | | | | | | | |
|-----------------|----------|--------|---------|--------|---------|-----------|--------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | G0VZ | 278 | 66 | 209 | 53 | 487 | 172788 |
| 2 * | G0CKP | 245 | 66 | 216 | 58 | 461 | 170004 |
| 3 * | GM3POI | 295 | 61 | 166 | 51 | 461 | 153216 |
| 4 | G3UJY | 173 | 52 | 220 | 55 | 393 | 121980 |
| 5 | GM3JKS | 160 | 51 | 183 | 51 | 343 | 102510 |
| 6 | GW3N/JW | 178 | 51 | 132 | 44 | 310 | 87210 |
| 7 | G3SJJ | 144 | 50 | 170 | 43 | 314 | 85653 |
| 8 | GM4SID | 176 | 52 | 112 | 37 | 288 | 76095 |
| 9 | G3GLL | 118 | 41 | 131 | 38 | 249 | 57591 |
| 10 | G2OT | 107 | 35 | 116 | 41 | 223 | 49020 |
| 11 | G4RGG | 102 | 31 | 96 | 39 | 177 | 37170 |
| 12 (M) | GM4CC | 109 | 31 | 92 | 24 | 201 | 31680 |
| 13 (M) | G3JRM | 55 | 32 | 70 | 19 | 125 | 17595 |
| 14 | G3ZDD | 55 | 24 | 26 | 14 | 81 | 9234 |
| 15 | GW3WWN | 37 | 18 | 9 | 5 | 46 | 3105 |

| UK RESTRICTED SECTION | | | | | | | |
|-----------------------|----------|--------|---------|--------|---------|-----------|-------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | G3RTE | 151 | 54 | 105 | 39 | 256 | 70308 |
| 2 (M) * | G0VQR | 138 | 49 | 117 | 34 | 255 | 67248 |
| 3 * | G3WPH | 129 | 52 | 98 | 35 | 227 | 58464 |
| 4 | G3RSD | 105 | 44 | 67 | 26 | 172 | 35700 |
| 5 | G3RHF | 86 | 38 | 86 | 29 | 172 | 34371 |
| 6 | GM0CFS | 133 | 43 | 44 | 19 | 177 | 32364 |
| 7 | G3ZGC | 85 | 38 | 58 | 25 | 143 | 27027 |
| 8 | G4EBK | 69 | 30 | 86 | 28 | 155 | 26448 |
| 9 | G4IRN | 67 | 30 | 73 | 32 | 140 | 25668 |
| 10 | MOAJT | 83 | 34 | 63 | 23 | 146 | 24453 |
| 11 | G0RDO | 66 | 31 | 65 | 27 | 131 | 22620 |
| 12 | G3MPB | 74 | 31 | 51 | 23 | 125 | 18792 |
| 13 | MUOFAL | 74 | 33 | 29 | 11 | 95 | 12276 |
| 14 | G3GMS | 67 | 26 | 29 | 13 | 96 | 11232 |
| 15 | G3GMM | 52 | 22 | 21 | 13 | 73 | 7665 |
| 16 | G3VYI | 73 | 26 | 10 | 6 | 83 | 7584 |
| 17 | G4DDL | 34 | 17 | 33 | 13 | 67 | 5850 |
| 18 | G4ZME | 34 | 15 | 21 | 10 | 55 | 4050 |
| 19 | G4XPE | 23 | 14 | 11 | 5 | 34 | 1938 |
| 20 | G3VQO | 15 | 10 | 5 | 3 | 20 | 780 |
| 21 | G3WRR | 15 | 10 | 5 | 2 | 20 | 720 |

| UK QRP SECTION | | | | | | | |
|----------------|----------|--------|---------|--------|---------|-----------|-------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | G2HLU | 70 | 32 | 44 | 21 | 114 | 18126 |
| 2 * | G3KZR | 97 | 32 | 27 | 10 | 124 | 15498 |
| 3 | G4DDX | 47 | 21 | 26 | 10 | 73 | 6480 |
| 4 | G0DCK | 31 | 12 | 38 | 12 | 69 | 4896 |
| 5 | G3HKO | 26 | 14 | 23 | 10 | 49 | 3528 |
| 6 | G3VMC | 28 | 14 | 23 | 7 | 51 | 3150 |
| 7 | GM4HOF | 25 | 13 | 19 | 10 | 44 | 3036 |
| 8 * | MW3OKA | 7 | 5 | 0 | 0 | 7 | 90 |

| OVERSEAS OPEN SECTION | | | | | | | |
|-----------------------|-----------|--------|---------|--------|---------|-----------|-------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | 9H1ZA | 103 | 58 | 101 | 55 | 204 | 68139 |
| 2 * | UT3UA | 98 | 56 | 88 | 50 | 186 | 59148 |
| 3 * | LZ1NG | 88 | 53 | 87 | 48 | 175 | 51207 |
| 4 | RK3BX | 67 | 46 | 80 | 54 | 147 | 43800 |
| 5 | LZ6C | 81 | 53 | 58 | 36 | 139 | 36846 |
| 6 | UA3DEE | 68 | 41 | 70 | 42 | 138 | 34362 |
| 7 | RA4YM | 75 | 45 | 53 | 35 | 128 | 30720 |
| 8 | UR7OC | 56 | 37 | 53 | 30 | 109 | 21105 |
| 9 | UA9SP | 45 | 32 | 33 | 33 | 83 | 17940 |
| 10 | K3ZO | 53 | 30 | 37 | 21 | 93 | 14442 |
| 11 | RV3FW | 35 | 29 | 54 | 30 | 89 | 14337 |
| 12 | RX3AEX | 32 | 29 | 39 | 26 | 71 | 11715 |
| 13 | US7GF | 64 | 45 | 10 | 8 | 74 | 11289 |
| 14 (M) | OK2KRT | 63 | 39 | 15 | 11 | 78 | 10650 |
| 15 | LY2OX | 42 | 32 | 23 | 21 | 65 | 10017 |
| 16 | HS0/G3NOM | 36 | 26 | 26 | 26 | 62 | 9672 |
| 17 | UR5E | 34 | 18 | 44 | 18 | 78 | 8316 |
| 18 | LY3BA | 47 | 33 | 8 | 8 | 55 | 6842 |
| 19 | OH2FS | 38 | 30 | 16 | 13 | 54 | 6579 |
| 20 | RV3DAK | 29 | 23 | 21 | 17 | 50 | 6000 |
| 21 | JA5APU | 29 | 24 | 17 | 16 | 46 | 5520 |
| 22 | RZ4AA | 23 | 16 | 17 | 15 | 40 | 3627 |
| 23 | JA2KKA | 10 | 10 | 18 | 16 | 28 | 2184 |
| 24 | OZ1AA | 21 | 17 | 8 | 8 | 29 | 2175 |
| 25 | OM7YC | 30 | 23 | 0 | 0 | 30 | 2070 |
| 26 | VA3IX | 10 | 9 | 17 | 15 | 27 | 1800 |
| 27 | VK8AV | 20 | 16 | 7 | 5 | 28 | 1764 |
| 28 | JA3VPL | 15 | 14 | 7 | 7 | 22 | 1323 |
| 29 | OH1AL | 24 | 19 | 0 | 0 | 24 | 1197 |
| 30 | JH1KLN | 12 | 12 | 9 | 8 | 21 | 1140 |
| 31 | Y03FLQ | 0 | 0 | 23 | 17 | 23 | 1071 |
| 32 | JM2RUV | 14 | 14 | 3 | 3 | 17 | 867 |
| 33 | JE2SOY | 0 | 0 | 14 | 12 | 14 | 468 |
| 34 | OZ4O | 8 | 8 | 4 | 4 | 12 | 396 |
| 35 | JA7ARW | 10 | 10 | 0 | 7 | 10 | 300 |
| 36 | JA1AAT | 0 | 0 | 7 | 7 | 7 | 105 |

| OVERSEAS RESTRICTED SECTION | | | | | | | |
|-----------------------------|----------|--------|---------|--------|---------|-----------|-------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | Y06MT | 127 | 72 | 16 | 13 | 143 | 35700 |
| 2 * | UA1ANA | 72 | 45 | 52 | 33 | 124 | 28548 |
| 3 * | LZ2L | 58 | 37 | 54 | 37 | 112 | 24198 |
| 4 | LZ1KP | 48 | 33 | 52 | 27 | 100 | 17460 |
| 5 | UN7CZ | 53 | 34 | 32 | 23 | 85 | 14193 |
| 6 | W1END | 44 | 33 | 30 | 23 | 74 | 11760 |
| 7 | RZ4AG | 48 | 30 | 19 | 15 | 67 | 8640 |
| 8 | YU1AAZ | 37 | 16 | 34 | 14 | 71 | 8040 |
| 9 | LZ1KAZ | 21 | 18 | 33 | 26 | 54 | 8678 |
| 10 | UA3DOM | 56 | 34 | 0 | 0 | 56 | 5508 |
| 11 | YL2PP | 31 | 24 | 9 | 8 | 40 | 3840 |
| 12 | UY5TE | 22 | 18 | 16 | 12 | 38 | 3420 |
| 13 | UN7EX | 8 | 8 | 30 | 23 | 38 | 3162 |
| 14 | SP7FGA | 40 | 28 | 0 | 0 | 40 | 3108 |
| 15 | OH1UP | 38 | 23 | 0 | 0 | 38 | 2484 |
| 16 | TA3BN | 13 | 13 | 15 | 12 | 28 | 1650 |
| 17 | VE3UKR | 5 | 5 | 19 | 16 | 24 | 1386 |

| OVERSEAS QRP SECTION | | | | | | | |
|----------------------|----------|--------|---------|--------|---------|-----------|-------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | LZ2RS | 65 | 43 | 86 | 50 | 151 | 41850 |
| 2 * | UA3DNR | 63 | 40 | 78 | 44 | 141 | 35532 |
| 3 | KC8LTL | 26 | 22 | 14 | 11 | 40 | 3762 |
| 4 | Y03FU | 0 | 0 | 39 | 26 | 39 | 2886 |
| 5 | UR5FCM | 24 | 17 | 0 | 0 | 24 | 1173 |
| 6 | VE7RG | 14 | 12 | 2 | 2 | 16 | 630 |

| OVERSEAS SWL SECTION | | | | | | | |
|----------------------|-------------|--------|---------|--------|---------|-----------|-------|
| Position | Callsign | 21 QSO | 21 Mult | 28 QSO | 28 Mult | Total QSO | Score |
| 1 * | UA3-170-847 | 22 | 18 | 17 | 16 | 39 | 3978 |
| 2 | JA2-9329 | 1 | 1 | 0 | 0 | 1 | 3 |

G3LIK, G4HZV, GW3SB, 8SOF, LZ1FJ and ZC4DW are thanked for their useful checklogs. OH1-688 was reclassified as a check log. * = award winner. (M) = Multi-operator station

SWL

With the summer behind us – and, yes, we did have a summer this year – listeners can look forward, hopefully, to a better autumn of DX. Band conditions during the last few months really have been quite poor if you are in the game of looking for new DXCC entities on the HF bands. If your interest is in 40m, the band always seemed to be full of stations from outside the UK, rather than the traditional wall-to-wall run of inter-G QSOs. This was a bonus if you like listening for European signals, but not so good if you chase WAB squares or British special event stations. This point was proved while I was logging at GB4KME in June: of 70 stations worked on 40m SSB, 28 were outside the UK.

If, however, you are a 6m fan – and there must be some listeners who monitor the band but do not tell – it was, perhaps the best Sporadic E season for a good few years. I may be biased now that I have a 5-element Yagi to use rather than dipoles or a vertical, but the band was open to Europe on many occasions in June and July, and there were good openings to North America, too. Indeed, some reports that I have seen suggest that the really big Stateside openings were some kind of F layer propagation, or Spread F, as I have seen it referred to.

This year's IOTA contest will have

passed by the time this column appears, but if you took part, please send in a log and make sure that you clearly state which section you entered. There are 12 and 24 hour SSB, CW and Mixed sections. SWL entries to all contests are dropping noticeably: we need to take an active part, otherwise listener sections are likely to be withdrawn. I was disappointed at the number of listeners who provided me with their QTH details or e-mail address for the 2004 RSGB Yearbook. If there is not a marked increase in SWL details next year, the facility may be withdrawn. As I have campaigned for a good few years to improve the SWL presence in a number of areas, I will be saddened if (a) SWL contests and (b) the SWL entry in the Yearbook disappear. The ball is firmly in *your* court.

AM

The *RadCom* July 2003 'nostalgia' issue certainly raised some interest amongst listeners who have been interested in the amateur bands since the 1960s or 70s. Paul Thompson, GM6MEN/MM3BCP, became interested in amateur radio when he heard local amateurs on topband AM in the 1960s. He remembers "just playing with a domestic tranny", which must have had a wider than usual tuning range, and up they popped. Paul was licensed in 1982, but before then he used a few interesting ploys with AM receivers during his SWL days. For example, he used two AM radios – a Soviet VEF as the main receiver, and his mother's Roberts radio as the secondary one – to resolve SSB or CW signals, using the Roberts with the volume turned down as an add-on BFO. Corny, but it worked and he still has 9V1VG's QSL to prove it. Paul remarked that it was cheaper than buying a communications receiver, and easier than building one!

He used AM in the early 1980s on 2m in the Southport area and is even toying with the idea of using it again this winter on topband. Paul has been having some success on that band using a 'snake antenna'. It is little more than a long piece of coax on the ground, but is, apparently, a good receive antenna as it has a very low noise to signal ratio.

Paul commented that he fully sup-

ported M5AEO's views on cards from SWLs. He loves to get SWL cards and always replies to them.

Another to have views on the 'nostalgia' issue was Peter Webb, BRS53907. Peter began listening in 1948 with an HRO and army vertical and well remembers AM transmissions. Peter has a vast array of QSL cards – 21,409 to be precise! (see photo). Indeed, he only requires confirmation from six Pacific islands, Chad and Niger for a full set. Peter is full of praise for the excellent service he receives from Dave Borne, G4CYW, the RSGB QSL Bureau SWL Sub-Manager.

TIPS

Good to hear from Chris, M3ERE, who is relatively new to radio and asked for clarification of how to QSL SWL reports. His first question concerned the allocation of SWL 'callsigns'. Most countries assign callsigns to short wave listeners, but some do it in different ways. Take our own 'RS' numbers: these are allocated upon joining the RSGB. It has been pointed out that 'RS' is easily confused with some Russian SWLs who also use 'R' SWL callsigns. Also, when entering an SWL contest, some logging programs consider 'RS' calls as Russian.

German SWLs have 'DE' callsigns, while most French SWLs are allocated 'F'. The difficulties start with Dutch SWLs, who are either allocated 'PA' or 'NL', depending on whether they join VERON or not. These SWL cards often state that QSLs should be returned to the SWL callsign plus a Dutch region number, eg 'R28'. Adding this simply means that the SWL will receive his card without delay because the correct Region number is shown on the card.

All QSL bureaus will forward SWL cards, but it does no harm to write on an outgoing card "BRS32525 via RSGB bureau" or "DE1LME via DARC bureau".

What details to include on a card for an SWL is a subject that I've discussed many times. The standard 'six-box' card can easily be modified to provide an adequate reply to an SWL card. Put the SWL's callsign in the 'Confirming QSO' box. The 'Date', 'Time', 'MHz' and 'Mode' columns speak for themselves. Any reply to an SWL report must include the callsign of the station that you were working, so you could insert that callsign in the 'RST' box. However, as long as that detail is shown, it can be included anywhere! ♦



Just some of the 21,409 SWL QSL cards amassed by Peter Webb, BRS53907.

VHF / UHF



Dave Jarrett, G4DCJ, new holder of 6m DXCC certificate no. 490.

It is now relatively easy to work 100 'entities' on the HF bands, whereas to achieve it on 50MHz is a real challenge, but that is what Dave Jarrett, G4DCJ, from Norfolk has done over a 10-year period. He started his quest in 1992 using just 2.5W to a home-made 4-ele Yagi at 25ft AGL rotated by the 'Armstrong' method - ie by hand. He has since upgraded his station several times and currently it comprises an FT-736R, 150W amplifier and a 5-ele Yagi at 65ft turned by a commercial rotator. His DX Century Club certificate is no 490 and he now has 111 entities in the log. Congratulations, Dave.

TRANS-ATLANTIC FM

26 June was an astonishing day for multi-hop Es propagation across the North Atlantic on FM Band II. This event was chronicled on Mark Hattam's, G4KGA, DX Radio website - see the list - and included audio clips of some of the stations copied. It seems to have started around 1845 when a listener in Co Fermanagh copied WHCF in Bangor, Maine, on 88.5MHz. At 2000 a listener in Ayrshire copied a fisheries broadcast from CBTB-FM, which runs 5.58kW, in Baie Verte, Newfoundland, on 97.1MHz. Several other stations were copied including some French-speaking ones, almost certainly in Quebec. If only on 2m!

144MHz Es

2003 continues to be a rewarding one for Es propagation and accounts for a major proportion of the scores of e-mails received in the past four weeks. On 16 June Dave Butler, G4ASR (IO81), made QSOs with 19 Is, 2 EA6s, an F and a TK, ODX being I8MPO (JN70) at 1829km. Next day in the afternoon he contacted a couple of SPs in KO02 and 12. In the widespread event on the 20th he completed with 38 stations, 0948-1055, comprising 11 DLs, 6 S5s, 5 YUs, 4 T9s, 4 9As, 4 HAs and 4 OEs, ODX YU1IO (KN04) at 1918km. Finally on the 22nd he made nine contacts, 0948-1151, with EAs ODX being EA9IB (IM85) at 1857km, then 1603-1644 he completed a further eight QSOs with EAs.

Nice to hear again from John Regnault, G4SWX (JO02), who caught the event on 22 June, 0957-1221, contacting 5 CTs, 13 EAs, EA9HA and EA9IB (IM85), CN8IG (IM75) and CN8LI (IM63). In a very

selective opening on the 29th, 1649-1723, he worked YU1EI and YU1IO (KN04), HA6ZB (KN07), O M 4 C W (J N 8 8) ,

HA0MK (KN08) and YO5BWD (KN27).

Bob Harrison, G8HGN (JO01), worked YO4BZC (KN45) at 1807 on 18 June for a new grid. In the morning event on the 22nd seven EA QSOs brought three more new grids, EA7DBP (IM66), EB7COL (IM77) and EA9IB. During NFD on 7 July from 0847 he contacted YO2KBB/P (KN06) and heard a couple more YOs. Another new grid was worked on 8 July, EA6/DF9UX (JM09) bringing Bob's tally to 188. Niels Montanana, G8RWG (JO01), was QRV in the two hour 22 June opening finding signals appearing and disappearing very quickly. He worked the two EA9s for a new grid and country, followed by stations in IM86 and 87, CN8LI and EA1TK/P (IM66).

Dan Lee, MW1MFY (IO81), was QRV in the 16 June event working TK/F1YG (JN42) and 10 Italians including IS0/IK6DZH (JN40). In about a half-hour from 0951 on the 20th he completed 34 QSOs with stations in DL, HA, OE, OM, S5, YU and 9A. From 1640 on the 29th he worked YU1IO, OM5CM and HA5NM (JN98), YO8RNF (KN37), LY2IC (KO14) and SP9JDP (JN99).

Chris Bartram, GW4DGU (IO71), reckons that the 20 June event was great, remarking that he has never had an Es QSO as short as 953km before; it was with DK1CM (JO40). (According to the DL8EBW website, the MUF reached 230MHz in the period 0950-1012 and, when the MUF gets so high, shorter distances can be worked). He contacted 44 stations on SSB plus DK1MAX on FM. Countries worked were DL, HA, OE, OK, OM, S5, T9, YU and 9A. Chris voices the usual complaint about so many operators sticking on 144.300MHz causing QRM and slowing down the QSO rate instead of spreading out.

Jamie Ashford, GW7SMV (IO81), made 13 QSOs with EAs on 22 June, ODX being EA9IB at 1811km. On 9 July he contacted IS0GQX (JM49). Clive O'Hennessy, GM4VVX (IO78) stirred things up soon after 1000 on 20 June creating a huge pile-up of Italians in "a weak and fluttery opening, very

much like the Perseids MS shower at its peak." He lists QSOs with IW5CNS (JN53), IK1JXY (JN44), IW2BSQ and IQ2LS (JN45), I2MCD (JN55), IK5CQV (JN53 and ODX at 1901km), IZ1BPN (JN35), IW1AZJ (JN34), IW1BCV (JN44) and IK1ZOF (JN35).

50MHz E-LAYER

Ted Collins's, G4UPS (IO81), report for the period 18 June to 15 July printed out to seven A4 pages and shows that there was Es activity almost every day. There were some double-hop events into the Middle East but there were some excellent multi-hop openings across the North Atlantic, a welcome phenomenon now that F₂ propagation is probably over for this sunspot cycle. In addition, there were some openings to Central and South America and the Caribbean.

First the trans-Atlantic events. On 16 June MW1MFY worked FY1FL (GJ35), PP8KWA (FI96) and two CUs, 1911-2050. Next day, 1938-2045, Dan contacted KP2/KF2NC (FK68), PJ7/K2GSJ (FK88), KP4EIT (FK68) who was only running 4W, YV4DDK (FK60), VP9/N0JK* (FM72) and FJ5DX (FK87). On the 29th C6A/W6JKV (FL16) and on the 30th PP5JD (GG52), PY5IP (GG54), LU3HR (FF76), PY1VOY* (GG86), PY1RO* (GG87) and LU3DQV (GF05); some fine DX there.

Steve White, G3ZVW (IO91), contacted C6A/W6JKV* on 6 July. In the big opening next day he worked 47 North American stations all the way from Florida to Canada in EL, EM, FM and FN fields, 2147-2316, mainly on CW. Earlier, at 1335 he had a QSO with NW5E* (EK98). On the 8th at 2142 K1SIX (FN43) and next evening KY5R (EM64) and NG4C (FM16). Also on 7 July Tim Stanley, G4DBL (IO91), worked 52 East Coast stations in about as many minutes. He mentions that there was a mid-Atlantic thunderstorm in progress in at the time.

On 26 June G4DEZ worked 30 W, 10 VE and a couple of CU stations during a major opening. At 1630 G4UPS heard K1TOL* working Europeans and a little later many S5,

YU and 9A stations were calling N1RA who was inaudible with Ted who missed the big evening event. After making over 200 QSOs with Europeans this day, GM4VVX swung his beam across the 'pond' for a dozen CW contacts and one on SSB with stations in FM19, FN11, 21, 32-34, 44, 45 and FO93.

On 30 June G4UPS heard FG5FR* (FK96?) with a big pile-up of Europeans from 2036 and Ted worked him at 2102 for his 184th country. VE1ZZ* (FN84) was his first Canadian QSO this year at 2045 on 6 July and a few others were heard. There was another opening the following afternoon when he contacted NN4X* (EL98) for his first US station this year and in the evening he worked K1GUN* and W1JJ*.

From 1234 on the 8th N3DB* was working ZB2EO. Other stations QRV were K3ZO*, VP9GE, NG4C, K9RJ*, W3TC and W7GG* (EM88) and at 1412 Ted contacted W5UN* (EM23). In the evening lots of Europeans were working across the pond to VE1YX (FN74) and he worked Bob at 2129. During the evening of the 9th KY5R, W5UN*, K5XX* and NG4C were heard working into Europe. G4DEZ contacted over 20 USA stations as far west as Nebraska and Arizona. Steve Burrows, M5BXB (IO91), had a 'mega month' on 6m in which KY5R gave him his 400th grid.

In the major opening on 7 July, Bob Harrison, G8HGN (JO01), worked 12 Ws and a VE1. All-time new fields were EM and FM and new grids were EM95, FM06, FN12, 21, 30, 41 and 42. On the 9th from about 2100 he heard K7WC (EM34), NG4C, W4DR, VE1YX then worked KY5R for grid 342. John Armstrong, GW3EJR (IO72), worked NG4C and K8MN (EM99) on the 8th.

Next to the Middle East and Eastern Mediterranean and in the morning of 20 June G4UPS worked JY9NX* (KM71) and 4X4IF*. At 1603 on the 26th Ted contacted JY4NE* (KM71) and on the 30th 5B4AGN*

(KM64) at 1925. At 1103 on 28 June G8HGN heard 4X4IX working GI6ATZ, a QRB of 4030km.

Finally the rest of the 6m Es and to give an idea of the extent of openings, G4UPS heard the following beacons: CN8MC, CT0SIX, ES0SIX, F6IKY, GB3LER, GB3MCB, GB3RMK, HB9SIX, IOJX, I5MXX, IZ5ZUL, IW3FZQ, IZ1EPM, LZ2CC, OD5SIX, OE3LXB, OH1SIX, OH9SIX, OX3VHF, OY6SMC, OZ71GY, SR9FHA, SV1SIX, SV9SIX, S55ZRS, TF3SIX, T99YVZ, 4X4SIX, 7Q7SIX and 9A1CAL. As space is at a premium, my apologies for not covering all your European Es activity this time.

TROPO

Just a few comments on VHF NFD. Steve Bunting, M0BPQ, was with the Clifton ARS at JO01DH and he reports that conditions on 4m to GM seemed great but activity was low. No Es were worked on 2m by G3GHN/P and, due to QRM from the BBC tower at Wrotham two miles to the east, the number of DLs worked was down on last year. On 70cm the GOPPO station was a 'lash up' using a TR-851, 100W to a 21-ele Yagi 8m AGL. No DL QSOs but an EI was worked. On 23cm they used a TS-2000 at 10W to a 35-ele Yagi 8m AGL with very disappointing results.

G8HGN got up early on 6 July when conditions to the south of France were good. On 2m and 70cm Bob worked F5KSE/P (JN02) at 994km, then F1USF/P (JN14) at 826km on 2m. F6KBR/P (JN12) was heard.

G4SWX reports poor conditions on 2m in the NAC contest on 2 July. John completed with four DLs, nine OZs and two SMs in grids JO43-46, 54, 64 and 65. ODX was SK7JM (JO65) at 898km. G8RWG worked F1GPL (JN05) and TM9ES (JN06) in the morning of 13 July and by 0830 F5VHX (JN04) was a good signal.

GM4VVX went out /P for NFD to give away a few points on 4m and

70cm. 4m was good with 10 QSOs on the Sunday morning. A CQ call resulted in a difficult QSO with S59MA* and later S51DI called Clive. 70cm was almost a complete waste of time.

On 2m GW7SMV worked 11 stations in DL, F, ON and PA on 21 June, ODX being DL3EBS (JO31) at 993km. On the 25th Jamie had QSOs with DL2OM (JO30) and ON1LAO (JO20) in the evening. During NFD weekend he lists 15 QSOs, ODX being EA2URE (IN93) at 959km. EA1CRK (IN73) was worked on the 11th, some Fs on the 12th, another nine stations over 500km on the 13th, ODX being DK1CL/P (JN48) at 884km.

METEOR SCATTER

Philip Lancaster, G0ISW (IO84), has returned to MS on 2m running an IC-746, 50W to a log periodic antenna. On 28 June using FSK441 he completed with DL5WG (JO52) in 12 minutes using the WSJT program. GW7SMV uses FSK441 on 2m and Jamie completed with SP2OFW (JO39) at 1437km and OK2BRD (JN99) at 1515km on 28 June and with OK2ZW (JN89) at 1409km on 4 July.

Mike Johnson, M5MUF (ex-GU6AJE), is now back in England at the Leicester QTH where he was first licensed as G6AJE (IO92). He is QRV on 6m using JT6m running 25W to a delta loop antenna. He has completed with F5NWK, OZ1DJJ and OZ1PIF and would like to try on 4m once he had sorted out a drift problem. He is updating his website - see the list.

ICELAND & THE FAEROES

Keith Tatnall, G4ODA, completed a very successful trip to Iceland and the Faeroes in June, driving some 3000 miles and activating rare grids on 6m and 2m. He and his Land-Rover arrived in Iceland on the 5th and, while driving around in the next few days, he monitored 50.110 and 50.150MHz. From IP03 on the 7th, 0920-1000, there was a brief Es opening to F, ON and PA and from HP93, 1750-1845, he made about 50 QSOs into Western France, EI, GW and Southwest England.

On the 8th, 1130-1242, he completed about 30 Es QSOs on 6m with stations in IO75, 92, JO02 and 10 from HP94 using the mobile whip antenna. Later on there was a brief Es opening to LA, OH and SM from HP93. Using JT6m mode on 2m in the morning of the 9th from HP93 he completed with G1ZJP. Propagation was poor till the 13th when, in a 14min Es opening from IP06, he made 10 QSOs with southern Gs on 6m.

Things livened up from the 16th and from 2050-2316 in IP34 he made about 160 Es QSOs on 6m into DL, ES, G, LA, OZ, PA and SP. There were auroral conditions next morning but no contacts were made. Then from IP24, 1100-1217, he completed over 100 Es contacts on 6m mostly with F and G stations and a few in DL, I and PA.

**Keith Tatnall,
G4ODA,
operating from
IP61 in the
Faeroes on 50
and 144MHz.**



Then he moved back to IP34 and was able to run his generator overnight. Between 1730 and 2330 he was overwhelmed with calls on 6m and made over 300 Es QSOs with stations from LA to CT. Overnight he worked several stations on 2m using WSJT with which mode he is very impressed. At 0613 on the 18th he worked G4LOH 'on some form of tropo propagation' up to S7; possibly along a weather front?

Next he moved to the Faeroes and was QRV for three days from the 20th. From IP61 on the 20th, 1440-1500, he made 20 6m Es QSOs into DL, ON and PA. Then 1659-1759 about another 40 contacts mainly to EI and south-west G. The following day in IP61, 1406-1902, another 30-plus Es QSOs were completed on 6m with stations from G to 9H1 in variable conditions and a further 20 or so later on. Using WSJT on 2m on the 21st he completed 28 contacts. Finally on the 22nd, 0857-1131, he had nine Es QSOs on 6m.

Returning via the Shetland Islands, from IO99 on the 24th, 1248-1901, he made about 65 Es QSOs on 6m with stations in DL, HB, I and OE – no Gs. So in all he made around 700 QSOs as TF/G4ODA and about 130 as OY/G4ODA. Thanks for a super effort Keith.

FINAL JOTTINGS

Frank Howe, G3FIJ (JO01), has asked me to mention the Low Power VHF Championship and its Trophy as

it has received little publicity since it was first awarded in 1996. You'll find details in the RSGB Contesting Guide on page 53 in the January 2003 RadCom.

Paul Thompson, GM6MEN, observes that under flat band conditions 6m is always full of birdies and spurious signals most of which sound like short bursts of packet or computer hash. But as soon as Es propagation starts, these noises disappear. He has heard these noises at his previous Shrewsbury QTH and on several different rigs but has no idea of their origin. Any comments?

Brian Clowes, GW4HBZ, mentions that some operators don't give their correct locator, relying on what someone else has told them or what they got from duff websites. The world-wide or Maidenhead locator is derived solely from one's latitude and longitude as explained in the RSGB's *Amateur Radio Operating Manual* available from the RSGB Shop. I would recommend Andy Talbot's, G4JNT, excellent program Lat2, which converts lat/long to locator and NGR and vice versa and which is spot on.

Thanks to Neil Clarke, GOCAS, for the May issue of *SunMag*, to Prof Martin Harrison, G3USF, for the latest issue of *The Six and Ten Report*, to Andy Barter, G8ATD, for the Summer

edition of *VHF Communications*, to DUBUS for the 2/2003 issue of *DUBUS* and to the UKSMG for the July issue of *Six News*, all read with great interest.

Sorry, but there is no room for the Moonbounce and solar data this time. The copy deadline for November is **16 September** and for December it's **Friday 17 October**. My telephone answering and fax machine is on 020 8763 9457 and the CompuServe ID is g3fpk ♦

ANNUAL VHF/UHF TABLE – JAN TO DEC 2003

| Callsign | 50MHz | | 70MHz | | 144MHz | | 430MHz | | 1.3GHz | | Total |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|---|-------|
| | Dist Ctr | Dist Ctr | Dist Ctr | Dist Ctr | Dist Ctr | Dist Ctr | Dist Ctr | Dist Ctr | Dist Ctr | | |
| G4DEZ | 87 | 67 | 26 | 6 | 89 | 20 | 41 | 11 | 20 | 9 | 376 |
| G3FIJ | 28 | 27 | 28 | 4 | 43 | 7 | 22 | 3 | - | - | 162 |
| G4APJ | 20 | 16 | - | - | 40 | 5 | 33 | 7 | - | - | 121 |
| G6TTL | 2 | 3 | - | - | 59 | 10 | 17 | 6 | - | - | 97 |
| G8RWG | - | - | - | - | 27 | 18 | - | - | - | - | 45 |
| M3CLY | 2 | 3 | - | - | 9 | 4 | 4 | 2 | - | - | 24 |
| G1UGH | 2 | 10 | - | - | 6 | 2 | - | - | - | - | 20 |

The District Codes are the 124 listed on page 56 in the January 2003 RadCom. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district may be counted. Countries are the current DXCC ones plus IT9. The deadline for the next issue is 16 September.

W E B S E A R C H



RSGB
ARRL
DX Radio
GU6AJE

www.rsgb.org
www.arrl.org
www.dxradio.co.uk
www.gu6aje.thersgb.net

'PSEUDOHET' COMPONENTS

(electronic items only)

RESISTORS All fixed resistors 1% tolerance, 0.25W

| Position | Value | Position | Value |
|----------|--------------|----------|----------------|
| R1 | 4k7 | R40 | 1k |
| R2 | 4k7 | R41 | 100k |
| R3 | 1k | R42 | 100k log pot |
| R4 | 1k | R43 | 3.9 |
| R5 | 10k | R101 | 100k log pot |
| R6 | 220R | R102 | 2k2 |
| R7 | 10k | R103 | 10k |
| R8 | 100k | R104 | 100k |
| R9 | 13k | R105 | 100k |
| R10 | 10k | R106 | 10k |
| R11 | 470 | R107 | 1M |
| R12 | 100k Log pot | R108 | 10k lin preset |
| R13 | 1M | R109 | 10k |
| R14 | 470 | R110 | 1k |
| R15 | 100 | R111 | 1M |
| R16 | 47 | R112 | 1k |
| R17 | 330 | R114 | 1M |
| R18 | 220 | R115 | 220 |
| R19 | 2k2 | R116 | 4k7 |
| R20 | 2k2 | R117 | 4k7 |
| R21 | 470 | R118 | 4k7 |
| R22 | 470 | R119 | 4k7 |
| R23 | 150 | R120 | 1k |
| R24 | 150 | R121 | 1k |
| R25 | 470 | R122 | 100k |
| R26 | 100 | R123 | 100k |
| R27 | 330 | R124 | 2k2 |
| R28 | 2k2 | R125 | 2k2 |
| R29 | 2k2 | R126 | 1M |
| R30 | 220 | R127 | 10 |
| R31 | 470 | R128 | 10 |
| R32 | 470 | R129 | 10 |
| R33 | 150 | R130 | 10 |
| R34 | 47 | R131 | 100k |
| R35 | 47 | R132 | 470k |
| R36 | 220 | R133 | 100k |
| R37 | 220 | R134 | 100k |
| R38 | 100k | R135 | 10k |
| R39 | 100k | | |

CAPACITORS (ALL 16VWKG OR GREATER)

| Position | Value | Tol % | Type |
|----------|---------|-------|---|
| C1 | 10n | | ceramic disc |
| C2 | 120p | 2 | polystyrene |
| C3 | 10n | | ceramic disc |
| C4 | 33µ | | aluminium electrolytic |
| C5 | 100n | | ceramic disc |
| C6 | 100µ | | aluminium electrolytic |
| C7 | 750p | 2 | polystyrene <small>88p + 88p IS MORE OBTAINABLE</small> |
| C8 | 47p | 2 | polystyrene |
| C9 | 2n2 | 2 | polystyrene |
| C10 | 5 – 65p | | trimmer |
| C11 | 1n | | ceramic disc |
| C12 | 5 – 65p | | trimmer |
| C13 | 47p | 2 | polystyrene |
| C14 | 330p | 2 | polystyrene |
| C15 | 33µ | | aluminium electrolytic |
| C16 | 10n | | ceramic disc |
| C17 | 10n | | ceramic disc |
| C19 | 33µ | | aluminium electrolytic |
| C20 | 10n | | ceramic disc |
| C21 | 10n | | ceramic disc |
| C22 | 33µ | | aluminium electrolytic |
| C23 | 10n | | ceramic disc |
| C24 | 10n | | ceramic disc |
| C25 | 680p | 2 | polystyrene |
| C26 | 1n2 | | polystyrene |
| C27 | 33µ | | aluminium electrolytic |
| C28 | 10n | | ceramic disc |
| C29 | 10n | | ceramic disc |
| C30 | 33µ | | aluminium electrolytic |
| C31 | 10n | | ceramic disc |
| C32 | 220n | | mixed dielectric, non-polarised |
| C33 | 2200µ | | aluminium electrolytic |
| C34 | 22n | | ceramic disc |
| C35 | 470n | | aluminium electrolytic |
| C36 | 100µ | | aluminium electrolytic |
| C37 | 1n | | ceramic disc |
| C38 | 100n | | ceramic disc |
| C39 | 100n | | ceramic disc |
| C40 | 470µ | | aluminium electrolytic |
| C41 | 470µ | | aluminium electrolytic |
| C42 | 100n | | ceramic disc |
| C43 | 100n | | ceramic disc |
| C44 | 33µ | | aluminium electrolytic |
| C45 | 100n | | ceramic disc |
| C101 | 10n | | ceramic disc |
| C102 | 10n | | ceramic disc |
| C103 | 47p | 2 | polystyrene |

INDUCTORS & TRANSFORMERS

| Position | Value | Tol % | Type |
|----------|-------|-------|--|
| L1 | 4µ7 | 5 | axial ready-wound choke |
| L2 | 3µ3 | 5 | axial ready-wound choke |
| L3 | | | 6 turns enamelled copper wire hand-wound on pencil |
| L4 | 1µ | | 14 turns, T50-6 toroid |
| L5 | 10n | | 15mm wire (discarded component lead) |
| L6 | 1µ | | 14 turns, T50-6 toroid |
| L7 | 4µ7 | 5 | axial ready-wound choke |
| L8 | 120mH | 5 | Toko ready-wound radial |
| L101 | | | see text |
| L102 | | | see text |
| L103 | 560n | | |
| L104 | 660n | | |
| L105 | 560n | | |
| T1 | | | Toko BKNK3335R |
| T102 | | | bifilar balun choke – see text |

DIODES

| Position | Maker's no | Type |
|----------|------------|------------|
| D1 | 1N4148 | GP silicon |
| D2 | 1N4148 | GP silicon |
| D3 | BB809 | varicap |
| D101 | 1N4148 | GP silicon |

TRANSISTORS

| Position | Maker's no | Type |
|----------|----------------|----------------|
| TR1 | BC547 or BC107 | GP npn silicon |
| TR2 | BC557 | GP pnp silicon |
| TR101 | BC547 or BC107 | GP npn silicon |
| TR102 | BC547 or BC107 | GP npn silicon |
| TR103 | J310 | junction FET |
| TR104 | BC557 | GP pnp silicon |
| TR105 | VN66AFD | VMOS FET |
| TR106 | VN66AFD | VMOS FET |

INTEGRATED CIRCUITS

| Position | Maker's no | Type |
|----------|------------|-----------------------|
| IC1 | LM324 | quad op amp |
| IC2 | 78L05 | 5V voltage regulator |
| IC3 | 74HC04 | hex inverter |
| IC4 | 74HC74 | D-type flip-flop |
| IC5 | 1496 | Gilbert cell DBM |
| IC6 | 1496 | Gilbert cell DBM |
| IC7 | OP27 | low noise op amp |
| IC8 | LM380 | audio power amplifier |
| IC9 | 78L05 | 5V voltage regulator |
| IC101 | LM339 | quad comparator |
| IC102 | 74HC04 | hex inverter |
| IC103 | 74HC390 | decade divider |
| IC104 | 74HC74 | D-type flip-flop |
| IC105 | 74HC00 | quad NAND gate |
| IC106 | 78L05 | 5V voltage regulator |
| IC107 | 74HC04 | hex inverter |

SOME SUGGESTED SUPPLIERS

| | |
|-----------------|---|
| Sycam | www.sycamcomp.co.uk |
| JAB | www.jabdog.com |
| Farnell | www.farnell.com |
| Maplin | www.maplin.co.uk |
| RS | www.rswww.com |
| Mode Components | 23-24 Warstone Lane, Hockley, Birmingham B18 6JQ, e-mail ctredwell@webelcester.co.uk |

L&S we will beat it on the spot*

* Item must be in stock at a U.K. authorised dealer. Written confirmation from a competitor may be required. Price match is available at the time of purchase for cash, cheque, credit card or normal interest bearing finance only.

ICOM

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State of the art 100 watt HF/50mhz DSP base with ATU

RRP: £1569 **IC-7400**

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for the very best price available!



100 watts HF/50mhz/144mhz base radio with ATU & DSP with free Desk mike and Speaker.

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RRP: £940 **IC-706mk2G**

CALL NOW
for the very best price



HF/50mhz/144mhz/430mhz all mode mobile

RRP: £689 **FT-817**

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for the very best price available!



The best portable radio HF/6/2/70 all mode.

FT-8900 Deluxe Quad band FM mobile 10/6/2/70 mobile **RRP: £429**

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FT-8800 Dual band version of the FT-8900 **RRP: £TBA**

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RRP: £199 **FT-1600**

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50 watt VHF mini rig with DTMF mike

RRP: £703 **IC-703**

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for the very best price available!



10 watt QRP HF/50mhz radio with built in ATU (ideal for the new Foundation license)

RRP: £329.99 **IC-207**

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Twin band VHF/UHF Mobile

IC-E90 3 band hand-held VHF/UHF + 50mhz **RRP: £309.95**

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IC-7800 Deluxe **RRP: £7999 approx**

DSP radio - call for details **CALL NOW** for the very best price available!

RRP: £359.95 **IC-2725**

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for the very best price available!



Dual Band VHF/UHF Mobile

RRP: £359 **VX-7R**

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for the very best price available!



3 band 5 watt water-proof hand-held 6/2/70

ATA5 120 7mhz -430mhz mobile antenna for FT-847/897/857 & FT100 **RRP: £249.95**

CALL NOW for the very best price available!

FT-2800 60 watt heavy Duty radio **RRP: £179**

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RRP: £CALL **VX-2R**

CALL NOW
for the very best price available!



2 watt twin band mini handy

accessories

look! New Miracle Antenna MkII has arrived!

Miracle whip MkII

This antenna has been designed with the Yaesu FT-817 & FT-897 in mind. The MkII uses a black anodized longer flexible whip for better low frequency tuning. The performance is staggering and it will work with any radio from 3.5-460MHz (25W max), without a counter poise. Ideal for listeners, radio amateurs and commercial applications. **ML&S: £129.95**



NEW RANGE JUST ARRIVED INCLUDING WEATHER STATIONS, PDA'S AND DIGITAL CAMERAS

NEW 3.3 Mega Pixel Camera.....£199!

bhi Ltd.

A British company producing probably the worlds best DSP noise reduction speakers and modules. ML&S stock the whole range of Bhi products offering excellent technical engineering, quality and reliability. You just wouldn't believe how much noise these units remove - SSB transmissions almost sound FM quality!

NES-5 Entry Level DSP Noise Cancelling Speaker for AM & FM Reception.....Only £79.95
 NESIO-2 Adjustable Noise Eliminating Speaker.....Only £99.95
 NEIM-1031 Noise Eliminating In-Line Module.
 The same as the NES-10 but an in-line module for you to place between your receiver/rig and own speaker.....Only £129.95
 Six Way Switch Box Need to Connect more than one piece of equipment to your bhi Noise Eliminating Speaker or In-Line Module? The 1042 Switch box is the answer.....Only £29.95

Limited TIME Offer!

Brand New Tokyo HiPower HL-50B Amps.

- 50W on 160m-6m
- Only 5W drive
- Ideal FT-817
- Small & Compact

RRP: £299.95 ML&S price: £229.95.



ML&S are pleased to announce their recent appointment for the full range of Oregon Scientific Products.

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- VR399 Digital Voice Recorder.....Only £69.99
- Digital Camera DS6618 Card Cam.....Only £59.99
- Digital Camera DS6888 D Shot.....Only £49.99
- Digital Camera OSD59300 3.3megapixel.....Only £199.99
- RM888PU Radio Controlled Compact Projection Clock.....Only £29.99
- BAR338PU Radio Controlled Projection Clock & Barometer.....Only £79.99
- WD338 Weather Station & DECT Cordless telephone.....Only £149.99
- BWRI02U Body Weight monitor with BMI & Remote Header Display.....£59.99

This is just a very short listing of the Oregon Range. Call now to place your order!

They have a huge range of different products including:

Clocks - Radio Controlled and Projection; Environmental Monitoring - Weather stations and Barometers; Sport and Fitness - Heart and Pulse Monitors, Pedometers, Scales etc; Personal Information Products - Organisers, Voice Recorders, Digital Cameras etc; and Educational Learning - utilising the latest educational techniques in a multitude of fun ways (mini PCs, laptops etc.) to introduce young people to information technology skills.

Not only is ML&S able to offer the entire range but we can ship anywhere in the world. Call the sales desk on 020 8566 1120 or email: Oregon@hamradio.co.uk

Maldol Antennas

We have just received our new delivery from Maldol.

Call today for a catalogue of the range.

New Maldol Handheld Discone, Maldol HDX30.

New discone to clip on top of any bnc scanner.....Only £38.95

The new FT-817mkII DSP is available from stock for only **£649.95.**

Price includes: New FT-817 fitted with DSP, NiCads, Microphone, Charger, Antenna, Strap and two year warranty.

Package 2

As above but complete with CSC-83 Carry Case and Miracle Whip mkII for only **£789.95**
 P&P on either package only £10.00.

NEWSFLASH

The New Icom Flagship. The IC-7800 was among many new products announced at Dayton this year.
 Call the sales team for details of this and all the other new products announced from the 'Big 3'



NEW RADIO FROM AOR! call for details

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 email: sales@hamradio.co.uk fax: 0208 566 1207

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- Only 145x52x233mm
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FT-857 with DSP Fitted, RRP £849, **ML&S £799**

PAY NOTHING FOR SIX MONTHS!

Pay discounted price of only £799 Interest FREE or pay 36 x £34.69 (TAP £1248.84, 26.9%APR)

ML&S Package Deal TWO

- FT-857 with DSP fitted ■ YSK-857 Head Separation Kit
- Collins 2.2kHz SSB Filter YF-122S ■ Collins 500Hz CW Filter YF-122C ■ ATAS-120 Motorised Auto Antenna
- Maldol Mount and cable assembly for above

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FT-897

The world's first 20W/100W Transportable Transceiver

For an afternoon at the park, climbing Summits on the Air or an emergency exercise, power your

FT-897 using the optional internal FNB-78 battery packs, and you're on the air completely portable.

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- Weight: 8.6lb, 3.9kg
- Can be internally fitted with 240V PSU (FP30) or two internal Ni-MH batteries
- TX External 13.8VDC: 100W HF/6m, 50W 2m, 20W 70cm
- TX using optional internal Batteries: 20W all bands.
- RX: 100kHz-56MHz, 76-108MHz, 118-164MHz, 420-470MHz

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FT-897 RRP £1099, **ML&S Only £989**
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ML&S Special BASE STATION SYSTEM Price Deal TWO

■ FT-897 ■ Internal PSU, FP-30 ■ Bolt-on Auto Tuner, FC-30 ■ Collins 2.2kHz SSB Filter YF-122S ■ Collins 500Hz CW Filter YF-122C ■ Maldol HVU-8, Eight Band Base Antenna
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ML&S provide the facility for Morse tests on demand on the morning of the last Saturday of every month (except December). We offer the 5 and 12 word-per-minute Morse Tests and the Foundation morse assessment. This is a unique opportunity to take your morse test in a relaxed environment. Any questions call Chris Taylor on 0208 566 1120 or email: morse@hamradio.co.uk



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All Band all Mode with DSP & ATU 160m-70cms

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100 watt HF Mobile
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100 watt HF with ATU & DSP

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Dual band VHF/UHF mobile with built-in TNC for APRS

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RRP: £TBA **New TS-?????**
200 watt HF & 100 watt 50MHz Mobile - call for details!
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RRP: £359.95 **TH-D7E**
CALL NOW for the very best price available!
Dual band handy with Built in TNC

YAESU

RRP: £2899 **FT-1000MP Mk5**
CALL NOW for the very best price available!
200 watt HF Flagship

RRP: £2299 **FT-1000MP Mk5 field**
100 watt HF Flagship
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RRP: £3999 **VL-1000 Quadra**
1000 watt HF/50MHz amplifier with Auto ATU
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RRP: £1299 **FT-920AFC**
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100 watt HF/50 mHz base station with DSP and Auto ATU

The original multiband radio

RRP: £1420 **FT-847**
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HF/6/2/70 plus 4 metres "Shack in a box"

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RRP: £849 **FT-857** The radio that has redefined mobile HF operation HF/6/2/70
CALL NOW for the very best price available!

RRP: £1099 **FT-897**
CALL NOW for the very best price available!
The smallest Base Station radio HF/6/2/70 + DSP with a host of options.

Announcing the NEW FT-817mk11 DSP

ML&S and a leading digital design manufacturer have teamed up to offer this exciting new variation on the world's biggest seller - the FT-817.

With many tens of thousands of FT-817's sold worldwide, we all agree that once again Yaesu have produced a milestone in electronic design and engineering. There is one feature however they left out. Digital Signal Processing.

ML&S are now able to exclusively offer the Yaesu FT-817 fitted with the world's very first DSP system available for this product. Not only does it reduce irritating background noise but it is fully usable on all modes, all bands.



Unlike its competitor, the battery compartment of the FT-817 does not have to be removed.

- Features:
- Fully adaptive noise cancelling
 - Minimum distortion to audio
 - Noise cancellation 20dB
 - Wide audio bandwidth for narrow band
 - Input and output sensitivity control
 - Input overload indication
 - 5-15Vdc operation
 - Greatly improved signal to noise ratio
 - Remote noise cancellation ON/OFF

| Technical Specification: | |
|--------------------------|-------|
| Power | 5-15V |
| Current Consumption | 50mA |
| Audio bandwidth | 50Hz |
| Noise attenuation | 20dB |
| Width | 26mm |
| Length | 36mm |
| Height | 10mm |

Call us 6 days a week, mon-sat 9.30-5.30

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zero deposit finance

Finance example: ATAS-120 RRP: £249.95.
Payment illustration: Zero deposit and NOTHING to pay for 6 months.
If paid in 6 months - no interest payable or 36 payments of £10.85.
Total amount payable: £390.60, APR: 26.9%. ML&S is a licenced credit broker.
Finance offered subject to status. Full written details on request. E&OE

Don't forget! ML&S are approved stockist for the following: MFJ, Maldol, Miracle Antenna, Revex, Icom, Kenwood

W.H Westlake

ELECTRONICS

CABLES & CONNECTORS

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| WESTFLEX 103, low loss Aircpaced, 50 ohm | £1/m |
| RG213U (eq U R67), M ii spc, 50ohm | 75p/m |
| URM43,5mm dia, 50 ohm, single conductor | 35p/m |
| RG58CU, 5mm dia, 50 ohm stranded conductor | 35p/m |
| RG1 74U, 2.3mm, 50 ohm Mini Coax | 40p/m |
| RG11U,10.3mm, 75 ohm low loss Coax | £1/m |
| URM70,6mm, 75 ohm Tx grade Coax | 35p/m |
| BT2002, 5mm, 75 ohm double screened Coax | 35p/m |
| RG62AU, 6mm dia, 95 ohm Coax | 50p/m |
| TV, 75 ohm, low loss Downlead | 30p/m |
| MINI 8 low loss 7mm dia, 50 ohm coax | 50p/m |
| POLYESTER (Dicrom type) 4mm GUY ROPE | 30p/m |
| RG214U | £2/m |
| RG223U | £1/m |
| 75 ohm Twin balanced Feeder, Light/Med 400w PEP | 30p/m |
| 300 ohm Ribbon standard light duty | 30p/m |
| 300 ohm Ribbon, HD USA Slotted type | 65p/m |
| 3 Core Mains/Rotator Cable, 5 amp | 30p/m |
| 6 Core Rotator Cable | 50p/m |
| 8 Core Rotator Cable | 70p/m |
| Aerial Wire, light duty PVC coated | 8p/m |
| Aerial Wire, medium duty PVC coated | 10p/m |
| Aerial Wire, heavy duty PVC coated | 25p/m |
| 16swg HD copper | 25p/m |
| 16 swg stranded copper | 25p/m |
| Single core screened, 2.3mm dia | 20p/m |
| Two core screened, 5mm | 30p/m |
| 6 core screened, 5mm | 40p/m |
| Red/Black DC power cable, 8 amp | 30p/m |
| Red/Black DC power cable, 15 amp | 45p/m |
| Red/Black DC power cable, 20 amp | £1/m |

Postage on cables - up to 20m £3. over 20m £5.

CONNECTORS ETC

| | | | |
|-------------------------------------|-------|--------------------------------------|-------|
| Self Amalgamating Tape | £4.50 | Dipole centre boxes | £3.50 |
| 4" Dog Bone Insulators | 75p | Polyprop Egg insulators | 60p |
| Mil Spec P/Sleeve N plugs 10.3mm | £3.00 | Mil Spec P Sleeve BNC plugs 5mm | £1.70 |
| Mil Spec P/Sleeve N plugs 5mm | £3.00 | Greenpar N line skt, 10.3mm | £3.00 |
| Greenpar N Panel skt | £2.50 | Mil Spec P/Sleeve PL259 plugs 5mm | £3.00 |
| SMA Adaptors to BNC skt/N/skt/SO239 | £3.00 | Mil Spec P/Sleeve PL259 plugs 10.3mm | £3.00 |
| SPECIAL N PLUG for W103 | £5.80 | Special PL959 for W103 | £1.70 |
| ADAPTORS BNC/SO239 | £1.80 | PL259/BNC skt | £1.80 |
| N plug/SO239 | £2.50 | N PLUG/BNC skt | £3.00 |
| BNC plug/N skt | £3.00 | PL259 plug/N skt | £3.00 |

Postage on above connectors etc £1 per order. Lots more on our lists 30p stamp for copy. Cheque/PO/Stamps with order, regretfully we do not take cards

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The Vine, Llandrinio, Powys SY22 6SH. Tel 01691 831111, fax 01691 831386. Email - info@vinecom.co.uk - Web Page www.vinecom.co.uk. Callers welcome by appointment, please.

SteppIR Fluidmotion Antennas

Here's something revolutionary! A dipole, 2,3 or 4 element yagi, and verticals that cover between 14 and 54 MHz with no gaps, with very low VSWR throughout that entire range. No need to set the antenna for "Phone" or "CW". These antennas are always the correct length. They are remotely tuned from the shack with a desk-top controller, which can also be interfaced to your transceiver so that the antenna length is adjusted automatically by reading the frequency from your radio. You can also design your ideal antenna using modelling software and implement from the controller menu, without leaving the shack. There are no fault-prone traps with these antennas. The yagis cover six bands with the lowest visual impact, and the verticals cover the full frequency range with one slim element. Keep the neighbour happy with a SteppIR antenna!

Vine now stocks OPTIBEAM from Germany

Last month's RadCom featured a review of the OB9-5 multiband yagi. The reviewer described the antenna as "the best of the best" We are pleased to offer the full Optibeam range. Contact us for more details for the Mercedes-Benz of multi-element HF antennas..

ACOM 1000 HF+6m Amplifier

- Up to 1kW output
- 160-6m Inc WARC
- Matches up to 3:1 SWR loads
- Easy-Tune aid
- Fully protected
- LCD Display inc PEP metering
- Mil-spec quality

This amplifier, and the automatic 2000A, were described by Peter Hart in March 2001 RadCom as "highly recommended", and "beautifully constructed and engineered". These extremely well-made and reliable units are the choice of operators who require RELIABILITY as well as HIGH POWER.

Here are a few user comments about the ACOM 1000 - "I am really glad and delighted that I made this choice as it has lived up to all my expectations and more!!" (G14MMJ) - "I worked for many years in the scientific instrument business.. and in my opinion, this equipment is of that standard." (G3IOE) "Superb" (G0CHQ) "It's very quiet with almost no fan noise and a silent changeover relay....A very well built and civilized amplifier". (E1GIZ) Check our website for pictures, specs and many other complimentary user comments.

ACOM 1000 is now back in stock at £1,599. ACOM2000A automatic 2kW no-tune



Rotators & Filters

PST rotators have a worm-wheel which drives the final gear directly, unlike other worm-drive units that drive planetary gears. This gives a non-reversible brake, and enormous torque. All gears are in ball or roller bearings in an oil-bath. No other amateur rotators come near this quality of engineering. Control units are all digital-readout with preset control. Priced from £499 (med duty HF) to £1299 (EME + 80m yagis!) there is a model for everyone. PST 2051 + preset controller- £ 579 - is pictured here....

PST have recently introduced a range of elevation rotators for 90 and 180 degrees travel, as well as a control unit with direct RS-232C output for computer control, and a speech synthesiser for operators with a visual impairment. It is the only talking rotator in the world!

LF. Filters from International Radio make a good radio really superb!. Models are available for nearly all transceivers. Still available - kits to improve the FT1000MP (and FT1000MP MkV) For just £54.95

Masts and Towers

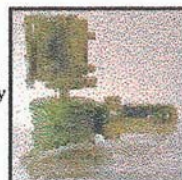
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New - HF mini-beam

From Germany, the Optibeam OB6-3M consists of a Moxon Rectangle for 20m, and yagis for 15 and 10m. Maximum performance is packed into a turning radius of only 14ft, with a 10ft boom. Optibeam's low-SWR feed system gives a VSWR of less than 1.6 to 1 at band edges. An external tuner also gives acceptable results on 17 and 12 metres.

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Over the past few years, every topic imaginable on amateur radio is included somewhere in somebody's web pages! The author gives his views.



I started a search for 'Beacons' this month. The idea of beacons for radio amateurs is primarily to make their presence known on the bands, to allow you to gauge or measure propagation for that particular path or region. Where are they? Well, they are on most if not all amateur bands and you can find a list of them on the G3USF Hambase pages, which contain a wealth of data and links. In fact, the pages are well worth bookmarking. In addition to these beacons, there are many other types, including those for air or sea navigation. See later.

LOWFERS AND EXPERIMENTERS

"What's all this stuff about LowFERS, MedFERS and HiFERS?" asks the Longwave Club of America home page. The answer comes under 'Part 15' - "The Federal Communications Commission allows low-power licence-free operation in certain parts of the radio spectrum, including segments of long-wave, medium-wave, short-wave and other frequencies. Dedicated experimenters have done some amazing things within those limitations. If that might be *your* idea of fun too, you've come to the right place!" It should be explained that the US, as some other areas, does not have an LF band. If you have ever used a domestic radio on your travels over there, you will know this.

In the US also, setting up a beacon is a great deal easier than in the UK. The 137kHz - 49MHz portion of the spectrum is divided up, it seems, into Low, Med and Hi, hence these strange names. See the pages for more.

SERIOUS BEACON STUFF

The Northern California DX Foundation Inc pages will give you the low-down on beacons. The history is worth reading. It all started in 1973 with HF beacons and then expanded in the late 70s and 80s. "As Cam Pierce was building beacons, we began to contact potential beacon station operators spaced around the world. At the United Nations, we talked to Dr Max de Hensler, HB9RS, (who) immediately agreed that he would like to operate a beacon there. Martti Laine, OH2BH, arranged for a beacon at the University of Helsinki and also in Madeira. Local DX club friend Bruno Bienenfeld, AA6AD, introduced us to an astronomy professor, Dr Ahron Slonim, 4X4FQ, at his *alma mater*, Tel

Aviv University. Kan Mizoguchi, JA1BK, introduced the beacon idea to the JARL. We also contacted old DX friend ZS6DN for a good location in the Southern Hemisphere... Here were eight groups ready to operate beacons and join W6WX/B at Stanford to complete the first world-wide beacon network."

These new beacons are unique. On a particular frequency, they transmit for 10 seconds every three minutes, day and night. A transmission consists of the callsign of the beacon sent at 22 words per minute followed by four one-second dashes. The callsign and the first dash are sent at 100 watts. The remaining dashes are sent at 10 watts, 1 watt and 100 milliwatts. The IARU became interested, too, and the movement grew. There is much more on these pages.

Look at the beacon schedule page which will give you not only listings but also the sound of each beacon's ID and the current status. You might also care to visit the OH2B beacon site, which operates at -24°C in winter. Beacon software is available to monitor scores of beacons and plot their signals, output etc. For more on each country's beacon system, refer to G3USF's pages already mentioned. An example is the LA0BY Norwegian beacon page. Enthusiasts for particular bands can go for such pages as OZ6OM's 50/70MHz page.

Technical, but not overly so, are the IPS Radio and Space Services pages of Australia. They are more to do with propagation than beacons directly, but one of course serves the other. Try out the HAP (hourly area prediction) propagation and ionosphere prediction pages (applet) by region or continent. Quite fascinating.

SOFTWARE

If you are looking for beacon software, there is plenty about, together with some links from the above pages. I liked the

Kangaroo Tabor Software page (commercial) which offers plenty of beacon- and propagation-related items and much else of interest for radio amateurs.

THE BEACON HUNTERS' HANDBOOK

I would be negligent to omit a series of pdf pages by Alan Gale, G4TMV, *The Beacon Hunters' Handbook*, which goes well beyond the scope of amateur radio and explains in great detail the other types of beacon currently in existence. He divides a thorough guide into: beacons and nav aids; beacon datafile and Morse code; and country code. Definitions, explanations, IDs and decoding, current modes of transmission; the effect of harmonics; links to manufacturers, tips for builders of transmitters and receivers and suitable equipment, use of filters, antennas etc. This should more than satisfy even the most curious.

RSGB

Should you ever wish to set up a beacon yourself in the UK, the RSGB Repeater Management Committee is the body to deal with; it works closely with the Radiocommunications Agency. There is a list of beacons and their status on the RSGB site. ♦

Above, left:
Map of the NCDXF beacon chain.

Above, right:
The Longwave Club of America home page.

WEB SEARCH

| | |
|------------------------------------|--|
| G3USF Hambase | www.keele.ac.uk/depts/por/hambase.htm |
| Longwave Club of America | http://lwca.org/ |
| Northern California DX Foundation | www.ncdxf.org/beacons.html |
| OH2B beacon | http://zmailor.org/p/mea/oh2b/ |
| LA0BY | www.qsl.net/la0by/LA-beac.htm |
| OZ6OM 50MHZ | www.qsl.net/oz6om/bcn1099.html |
| IPS Radio and Space Services | www.ips.gov.au/ |
| Kangaroo Tabor Software | soft.com/abw/ |
| Alan Gale, G4TMV | www.alan.gale.clara.net/files/hunter.pdf |
| RSGB Repeater Management Committee | www.coldal.org.uk/beacons.htm |
| RSGB | www.rsgb.org |

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- More details due in October RadCom or see: <http://www.dxdelta@g4dbl.com>
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Space



The ISSL Tokyo University's CubeSat, XI-IV. (Copyright ISSL, University of Tokyo)

FO-29 RECOVERED

JARL reported that the FO-29 command team succeeded in restoring transponder operations on board FO-29 at 0530UTC on 16 June. The command team believes that a major solar flare earlier in June was the likely cause of the failure. Satellite users worldwide will be delighted to have this firm favorite back in service. For users in the UK, it gives excellent coverage over Europe and some interesting opportunities to work satellite DX into the USA and Canada. It is even possible to work India on the eastern passes. If you do, let me have a report for this column.

SO-50 MORE ACTIVE

Recent changes in command arrangements should mean that this excellent satellite is switched on more frequently over Europe. It may not be on for every pass, but it is certainly worth listening out for. Howard,

G6LVB, recently activated the Isle of Man and included SO-50 in his satellite operations, using a 5W handheld and an Arrow antenna.

This satellite uses the same frequencies as AO-27 – downlink 436.800MHz, uplink 145.850MHz – but needs a continuous 67Hz tone on the uplink signal. Regular users of SO-50 have noticed several stations trying unsuccessfully to use this satellite, possibly because they set the 67Hz as a 'tone burst'; it must be a *continuous* tone (see the CTCSS feature in your rig's handbook).

The owners of SaudiSat are monitoring the effects of increased activity on the power budget of the satellite; if the results are satisfactory, we are hopeful that it may be switched on permanently for amateur use. The receiver on SO-50 is *very* sensitive. Just a watt or two to a small beam is plenty. Please keep power levels down.



CUBESATS

As part of an international education project, students are being encouraged to design and build miniature satellites based on an overall weight of less than 1kg and a 10cm cube.

Strongly supported by American, Japanese and Danish universities (why no British Universities?) the first batch of satellites was launched at the end of June from Plesetsk in Russia using a *Eurokot* launcher. The *Eurokots* are ICBMs (Inter-Continental Ballistic Missiles) converted for civilian use. Using amateur frequencies, a wide range of communications experiments is being flown; there is insufficient space in this column to give full details. A handy chart with details of frequencies, modes and websites for the individual projects can be downloaded from Niels Holmgård Andersen's website. Saved as a pdf file, it will print out for handy reference.

CubeSat XI-IV from the Intelligent Space Systems Laboratory at the University of Tokyo looks particularly interesting – callsign JQ1YCW, telemetry FSK, AX25, 1200bps, and frequency 437.490MHz. The transmitter power is 800mW to a half-wave dipole antenna. ♦

VALENTINA TERESHKOVA ANNIVERSARY

The Special call GB1WIS was on air in June to celebrate the 40th anniversary of Valentina Tereshkova's historic space flight to become the first woman in space.

All of the operational analogue satellites were activated, and 130 QSOs made with 32 countries. Organisers of the event, Robert, G8ATE, and John, G7HIA, were very pleased with the results, working many new calls, and several stations who had taken part in previous anniversary events for Sputnik and Gagarin. QSLs for all contacts are via the bureau.

The National Space Centre Amateur Radio Society was also on air for the anniversary with its call GB2NSC, making 100 contacts on HF during Sunday 22 June (see photo). Previewed in the local press, the HF event proved popular with visitors to the Space Centre, who were able to sample amateur radio first-hand, passing short greetings messages.



GB2NSC on air at the National Space Centre.

W E B S E A R C H



Cubesat Chart
ISSL Tokyo University
National Space Centre

http://home.earthlink.net/~maenpaa/cubesat_table.pdf
www.space.t.u-tokyo.ac.jp
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| Rigblaster Plus mint boxed | £125 | Motorola GM950 (should be easyconvert to 4m) | £100 |
| Trio/Kenwood Ts711e 2m multimode base | £299 | Microwave Modules MML144/200s 200w 2m Amp | £230 |
| Fairhaven RD500 0-1700mhz multimode receiver with remote | £450 | Microwave Modules MML144/100s 100w 2m Amp | £95 |
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ML&S are now able to exclusively offer the Yaesu FT-817 fitted with the world's very first DSP system available for this product. Not only does it reduce irritating background noise but it is fully usable on all modes, all bands.

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|---------------------|-------------|---|
| Power | 5-15VDC | Unlike its competitor, the battery compartment of the FT-817 does not have to be removed. |
| Current Consumption | 50Ma | |
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| Noise attenuation | 20dB | |
| Width | 26mm | |
| Length | 36mm | |
| Height | 10mm max | |

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Laura Jarman, now M3LAJ, on the day of her exam success with mum, Sharon, G1GFE, and grandfather John Wilson, G6YVS / M3JRW (see '3G Radio Family').



Newcomers'

Now that the Morse code is no longer a licensing requirement in the UK, HF operation is available to all three levels of licence holders. But where so you start?

If the removal of the Morse test has prompted you to have a go at HF there are many ways to equip the shack but most will be done on a budget and some budgets will be tighter than others. When I got my HF ticket, almost 20 years ago, I had a fairly low income, two small children and a mortgage that appeared to be equivalent to the national debt of a small third world country, so I know about tight budgets!

My solution was to build my own station. After many hours of slaving over a hot soldering iron I had a QRP (low power) transceiver, an antenna tuning unit and a 'home-brew' antenna. I made lots of contacts and learned a fair bit about radio. I would thoroughly recommend the 'home-brew' approach to anyone starting out on HF.

Kits take much of the guesswork, or experimentation, if you prefer, out of home construction. The kits from Lake Electronics or Tim Walford's Somerset range are always popular, as are the Howes kits from G3TUX.

Another approach is to transvert using your existing VHF equipment. I have a Howes kit that is used with a 144MHz rig to give 14MHz transmit and receive capability. There are commercial transverters also available that cover several HF bands at very reasonable cost. I recall one by Tokyo was quite popular a few years ago and they sometimes crop up on the second-hand market.

Whatever you use, please let me know how you get on. News is always welcome, especially if accompanied by photographs.

G0FYN ON WORKING M3s

Ian Hogan, G0FYN, has just recently returned from a visit to his XYL's (wife's) parents' QTH (home) in Tubbercurry, County Sligo, in North West Ireland. Ian convinced his wife that the WX (weather) may be bad and it would be prudent to take his 7MHz dipole and his Alinco DX-70TH with him.

Well the WX was true to form, 2km visibility, 20–30mph winds and rain! Ian had "no choice" but to get on the air. Between 16 May and 24 June he made a total of 168 contacts with 142 stations, from 5 countries. Some 37 contacts (26%) were with Foundation Licence holders and Ian wishes to thank all the M3s for making his washed out visit a busy radio experience.

The antenna was just 3m above the ground at the centre and fed with 100 watts from the Alinco. It was interesting to note that 27 stations worked in West Yorkshire were all within 25 miles of each other and other 'clusters' formed around Aberdeen and the Dartford Tunnel area.

Ian's report just goes to show what can be done with a limited station and a bit of spare time and I think it is a credit to Ian for taking the time to encourage the Foundation stations by working them from EI. Well done Ian.

3G RADIO FAMILY

Finningley Amateur Radio Society sent word about one of those quirky statistics that crop up from time to time. John Wilson, then G6YVS, was the very first person to enrol with the club when he undertook the Morse Assessment and became M3JRW. Then, as fate would have it, his granddaughter, Laura Jarman (11), became the 100th person to enrol with the Finningley club when she passed the Foundation exam. Completing a three generation family involvement is John's daughter, Sharon Jarman, G1GFE, who became member 101 when she passed the Morse Assessment.

Lead Instructor and Society Chairman, Harold Scrivens, G0UGE, champions the worth of the Foundation and Intermediate licences and is full of praise for the attitude and application shown by all his candidates. He further reports a busy time ahead for himself and Peter Myers, G3UWT, with their next two courses already fully booked.

Excellent news about the courses and the rapid growth of the club, keep it up!

INTERMEDIATE AT 8

Pauline Odle, M3HRY/2E1HRY, sent news of one youngster's success in quickly moving up the licence ladder. Her son, Richard, M3ANE, was just 8 years old when he took part in an Intermediate course that was co-ordinated by Brian Reay, G8OSN, and run by the Bredhurst Receiving and Transmitting Society (BRATS). Richard takes up the story. "I was really pleased to pass the exam and now I hold the callsign 2E1RIO. I became interested in amateur radio through a schoolteacher who used to teach my older brother Stephen, M3HRX/2E1HRX. She introduced me to another club but they unfortunately do not run courses. Since I joined BRATS I have learnt lots of things about amateur radio from their field days, outside events, DF hunts and lectures. I have been encouraged by lots of radio amateurs from across Kent and Essex. I am looking forward to learning more about Morse code and to try and learn the new RAE course."

Well Richard, at this rate I am sure you will be top of the class when it comes to GCSE physics and the like. Good luck with the new RAE, we should have news of the revised syllabus and exam structure very soon, watch this space. ♦

News

W E B S E A R C H



Lake kits:

<http://ourworld.compuserve.com/homepages/radkit/index.htm>

Walford kits:

<http://www.users.globalnet.co.uk/~walford>

Howes kits:

<http://www.g3tux.co.uk>

Many newcomers to amateur radio want to start a QSL collection as soon as they get on the air and, with the expected influx of former Class B amateurs on the HF bands, many of whom will also want to start collecting QSLs, there is no better time for a reminder about the workings of the RSGB QSL Bureau. Graham Ridgeway, a volunteer QSL Bureau Sub-Manager of many years standing, explains what you can do to help make the system run smoothly.

The QSL Bureau Sub-Manager's

Right: Author Graham Ridgeway, M5AAV, sorting cards from overseas for M5 licensees.

I am aware that every amateur and SWL in the UK knows – because they have read the relevant section in the *RSGB Yearbook* – the basics of sending and receiving QSL cards. What do you mean, you haven't and have no need to? Perhaps you should. You might discover that all outgoing cards are sent to PO Box 1773, Potters Bar, Herts EN3 3EP, and *not* to your Sub-Manager (oh yes, it happens!) Also that pre-printed address labels are available upon receipt of an SASE, from the same address.

IMPROVING RETURN RATES

So, how does one improve the return rate of cards? Have you supplied your Sub-Manager with envelopes? No? Perhaps that's why your return rate is so abysmal. Or have you not restocked his supply? He is unlikely to chase after you. This is why you are asked to number all envelopes, and mark one clearly as "Last Envelope", so that *you* know when to restock.

Boxes for despatching cards to the Sub-Managers.

Your Sub-Manager is, please remember, a volunteer, doing this task to help you. You do not have to be an RSGB member in order to *collect* cards (although it would be preferred of course) but you *do* have to be a member in order to *send* cards out via the bureau. But just because you have not sent any cards, do not assume that none have come in for you.

Right, you now have envelopes waiting for those cards to arrive through the system. These are, one would hope, nice manilla C5 size, and you have used 'non-monetary' stamps – ie marked "1st" or "2nd" class, so that nobody has to worry about Royal Mail price increases. Oh, and you did get the envelope in which you sent them to your Sub-Manager weighed at the Post Office, and not just stick any old stamp on it? Sub-Managers do not like forking out the thick end of a pound for under-stamped envelopes, even though you would reimburse him as soon as asked, wouldn't you?

It is of course appreciated that not everyone wants to collect cards. So why not, instead of just ignoring the fact that your Sub-Manager will have to store these unwanted cards for at least three months, do the courteous thing? Drop him a line or e-mail and tell him. At least then he knows where he stands, and can file any cards accordingly upon receipt. And please do not say, "I don't know who my Sub-Manager is." They are all listed in the *Yearbook*, on the RSGB website, on my website, or a quick telephone call to RSGB HQ will provide the information required.

Another thing to remember is that when you go on holiday, or on that 'mini-DXpedition', which involves the use of another UK prefix, that sub-manager will *also* require to be supplied with envelopes. In other words if you as, say, an M3, operate from Scotland as an MM3, some envelopes should be lodged with the MM3 Sub-Manager.



The same applies when you change your callsign. Instead of just forgetting to send envelopes to your old Sub-Manager, let him know your new call, and he may redirect them for you. Even better, make sure he is still supplied with envelopes which will keep you going for a while: even though you stop using a certain callsign there will still be cards arriving which can take quite a while to get through the system.

THE SYSTEM

One question I am frequently asked is either, "How long does it take to get a card back through the system?", or "Why does it take so long?" The best explanation is to try to explain how the bureau system works.

You write out your cards, pack them up and send them to PO Box 1773. These are then sorted into the relevant sections waiting for despatch to the overseas bureaus. Once a suitable weight is attained, the cards are sent off. Upon receipt at the overseas bureau, these boxes are opened (how soon after receipt we shall never know) and sorted for despatch to the relevant Sub-Manager at the other end. Again there is a wait for a certain weight or quantity to be reached before they are forwarded. One must now bear in mind that this overseas Sub-Manager is also probably a volunteer, and may not sort his cards as soon as they arrive. One will then assume that he has envelopes for the amateur to which your card is addressed, and





Left: Jan Case, RSGB HQ QSL Bureau Supervisor, sorts cards for M3 licensees.

Below, left: Post these, and get to the rig again! The M5AAV shack.

a card: if you make an error, write out a new one, as cards with alterations on are invalid for awards.

I am often asked whether it is worth getting multi-coloured, double-sided cards printed in an attempt to increase the 'collectability' of your cards. There is no simple answer to this. It is your choice, and depends a lot upon whether you are going to send a card for every QSO made (expensive!) or just for those for which you really wish to get one in return. Or perhaps you are someone who only responds to incoming cards. Although it may sound obvious, if you do choose the 'multi-coloured' route, just think a bit first. Ask yourself if you would be happy to receive your card. Does it stand out? Is it clear, and not over-fussy? After all, at the end of the day, you are hoping for a card in return. Your card, and the way it is presented, tends to be a reflection of your character.

I was asked by one of 'my' M5s why it was that although he had sent out over 300 cards he had only received six back. Explaining the torturous route of a card helped a bit; he had only been licensed a year at the time. My own return rate (three years plus) is around 15% on HF so far, and rising. On VHF, over 20 years of operating mainly on 2m produced a return rate of just 41%, although on 70cm the return rate was 83%. So you have to accept that not everyone wants or sends cards.

So, what to do if you either do not get a card back or if yours is returned marked "Does not use the services of xxx bureau"? In the latter case, if you really want a card from that station, try the direct route. In the former, assuming a reasonable length of time has elapsed, the direct route may work, as may a second card via the bureau, although I have seen cards from overseas marked "third request" for contacts over 10 years previously. I would suggest that one will not be forthcoming after that period has elapsed.

Details of QSL managers for a lot of DX stations can be found in the 'HF' column in *RadCom* on a regular basis, on the Internet (eg the 425 DX News service), and also on packet radio.

So, spare a thought next time you send some cards off, not only for Jan and her happy crew at the RSGB Bureau at HQ, but for all the volunteers who keep the system running. Help them to help you. Your Sub-Manager is there to help if needed. Most can be contacted by e-mail, all by 'snail mail' (and an SASE really is mandatory), and I for one am not averse to receive telephone calls.

With that, may I wish you Good DX, and an improvement in your return rate. ♦

Tale

again, there could be a delay until a certain weight limit is reached (because we Sub-Managers wait for an envelope to be filled unless you have stated on your envelope "Wait 6" or "send whenever"). Eventually that amateur will receive the cards, check his log, and hopefully write you a return card. Then, the whole procedure is reversed.

A year to make the round trip is quite good, two years not exceptional, three or more certainly not unknown. This is always assuming that the overseas amateur has envelopes lodged with his bureau. If not, your card will fall into that great big black hole, or returned, as the DARC (German national amateur radio society), among others, is very good at doing.

WRITING YOUR CARDS

When you write your cards, make sure that all details are correct. Date, time (GMT/UTC of course), band, mode, report and callsign. Also, if one is being used, the callsign of the other station's QSL Manager, eg "via W1XXX", should be shown nice and clearly. When you sort your cards into prefix order before sending them off (you do sort them, don't you? Oh good) – it is the *QSL Manager's* call that is used in that sort.

If you have Internet access it often pays with a 'rare one' to do a quick check on QRZ.com to see how the station or QSL Manager wants the cards. Unfortunately, too many these days seem not to use the bureau sys-

tem, and will only QSL direct, when an IRC or 'Green stamp' (US \$1 bill) plus envelope is required.

Your cards are now written and packed, all the same way up, callsigns nice and legible, and correct. I add that with good reason: I am not aware that the M4 series, for example, has been issued, and I'm sure that M5RIC did not operate from '9E' in 2002.

While on the subject of callsigns, a word here to the listeners. Please listen for more than 10 seconds before scribbling out a card. In fact it is always good practice to report on two or three contacts, that way you will be certain you have the call correct, and the report will be more meaningful. Perhaps when designing your cards, you may like to consider incorporating this feature.

I have found that the greatest number of errors in respect of callsigns is on listener's cards and on QSLs confirming CW contacts. As a mode, it may get through when conditions are down, but it is also more prone to misreading/mis-sending. One dot makes a huge difference.

So your package has been sent off to HQ. You have stamped it correctly and made sure it is securely packed. Now you can sit back and wait, while working the next set of juicy DX, knowing that you have done everything you can to ensure smooth progress for your cards through the system...

OR HAVE YOU?

There are recommendations laid down for the sizes of cards. Do yours conform? We all know about the 'army blanket' cardboard favoured by some Eastern Bloc countries, as well as the 'rice paper' so beloved by others; hideous to handle in bulk. But then so are cards which are too small (75 x 50mm) or too large (200 x 150mm). These will either get lost, folded or torn somewhere along the line – trust me. So try to keep them at around the 140 x 80mm size.

Computer-generated labels stuck on your cards are fine, and easy to read, assuming of course that they were correctly lined up when printed (I have seen too many with half the print missing, invalidating the QSL). Also, please do not alter anything on



WEB SEARCH

RSGB (Go to 'RSGB Information' then 'RSGB QSL Bureau') www.rsgb.org/membersonly
G8UYD/M5AAV website www.users.zetnet.co.uk/m5aav/index.htm
QRZ.com: www.qrz.com
425 DX News: www.425dxn.org

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| YAESU FT-7100M.....DUAL BAND MOBILE..... | 225.00 |
| YAESU FT-726R.....2M/70CM MULTIMODE BASE..... | 399.00 |
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The author had been searching for a compact beam which could be easily and quickly assembled for portable operations from Scottish islands, because time wasted assembling a complex station on an island means that many lose the chance of a QSO with that island. Here is his solution.

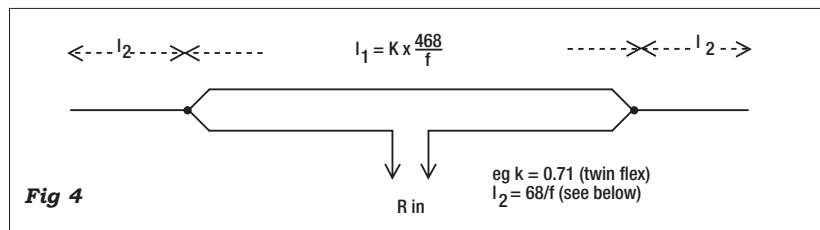
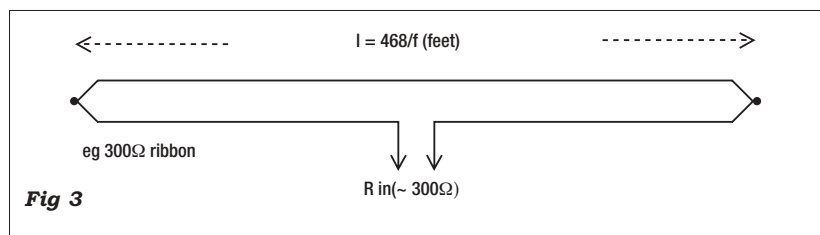
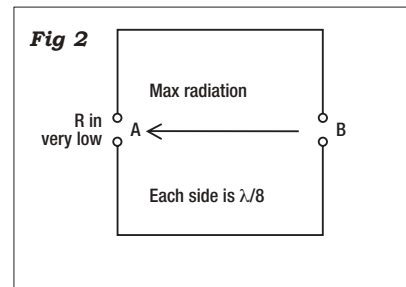
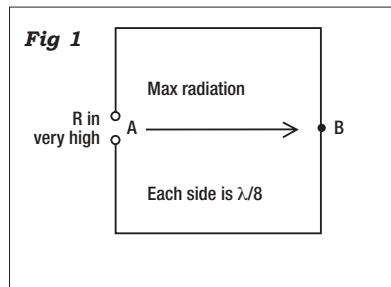
We must assume that if a station is calling you, he/she can hear you (not always the case nowadays of course, when 'listening' means, for some, watching the DX Cluster listings on a monitor and then calling blind, whether you can hear the DX or not!). Let's be honest, a compact beam is unlikely to give you more than 3dB gain – equivalent to half an S-point at the other end. Is it worth the effort?

However, these thoughts did not stop me experimenting. Having done all my DXing, in my previous life as 5Z4KL, with quads or loops, I dug out my old 1970 bible, *All About Cubical Quad Antennas* by the late Bill Orr, W6SAI. I had built and worked /P with half-size loaded two-element quads, but had rejected them due to the narrow bandwidth and initial tuning problems. However, my 1964 edition of the ARRL *Antenna Handbook* made passing reference to half-wave loops. I decided to investigate these further.

THE HALF-WAVE LOOP

First of all, let me say that theoretical information on the half-wave loop seems to be very hard to come by. A search through some two dozen antenna books at a recent radio rally, produced only one reference of any substance (and this originated from the ARRL *Antenna Handbook*).

A half-wave loop is formed by bending a simple half-wave dipole into a loop, the circumference of which is



thus a half-wavelength long. The loop can be any shape, from square (with each side $\lambda/8$) to circular (of radius $\lambda/4\pi$). In the case of the square loop, there are two possibilities – the closed loop, as in Fig 1, or the open loop, as in Fig 2, in which the side opposite the feed-point is open at its centre.

The current distribution is similar to that along a half-wave dipole. In Fig 1, the input resistance at the feed-point A is high (a few thousand ohms) as the current is minimum at A and maximum at B. In the case of the open loop (Fig 2), the current is maximum at A and minimum at B. The input resistance is therefore low and of the order of a few ohms. Unlike the simple dipole, there is no direction in which radiation is zero. This results in the gain of the half-wave loop being about 1dB less than that of a dipole (-1dBd), but having a front-to-back ratio of some 4 to 6dB in the direction of maximum radiation which, for both configurations, occurs in the plane of the loops and in the directions shown by the arrows. Such a half-wave loop would therefore normally be mounted horizontally.

If there are any readers who are dab hands with EZNEC or similar, the author would be most interested to see the radiation pattern of such an open horizontal half-wave loop in the horizontal plane, referenced to a simple horizontal dipole at the same height.

As stated above, the loop can be any shape. It occurred to me that a square loop requires four spreaders whereas a triangular (or 'delta') loop requires only three. This could be an advantage for /P operation. The 'open' configuration input resistance is too low to match 50Ω coax directly. Either some form of matching must be used, or the input resistance must be raised. It occurred to me that a folded dipole does precisely that.

THE FOLDED DIPOLE

Simple form

One or more extra conductors half a wavelength long are added in parallel with the original dipole – see Fig 3.

The input resistance is raised by the square of the number of conductors. For example, if the folded dipole has two conductors, its input resistance

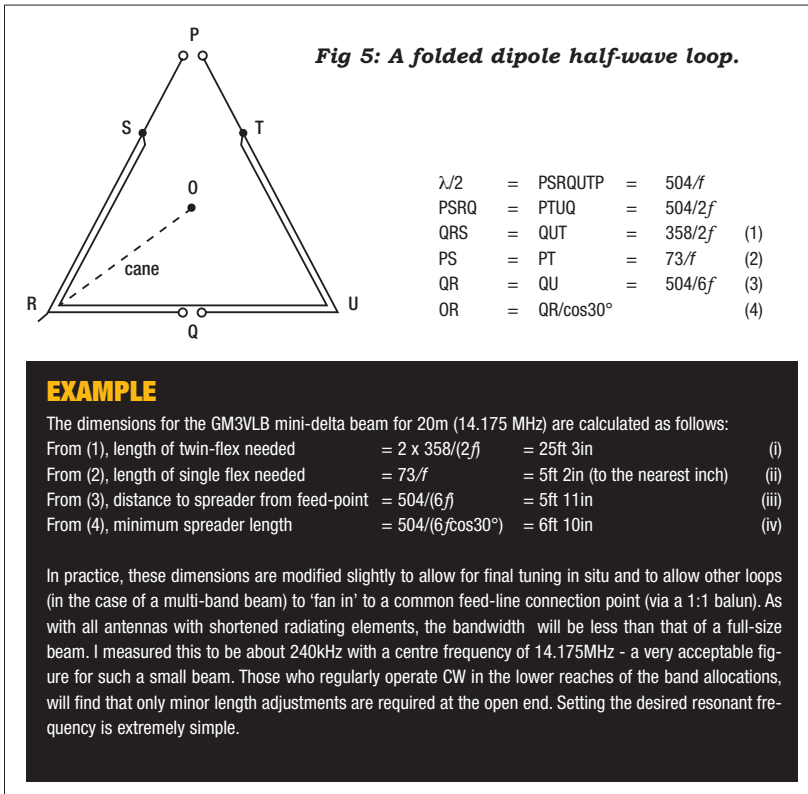
Fig 1: The closed half-wave loop.

Fig 2: The open half-wave loop.

Fig 3: A simple folded dipole.

Fig 4: A 'modified' folded dipole.

The GM3VLB



rises from 72Ω to around 300Ω (with three conductors, the input resistance would be 72×9 , ie around 650Ω). Another useful feature is that the bandwidth of the folded dipole is also increased, relative to a simple dipole.

The length, l (ft), of a simple horizontal dipole in free space is given by the formula

$$l = \frac{492}{f}$$

where f is the desired resonant frequency in megahertz (MHz). In practice, due to end-effects, the actual physical length is reduced to $468/f$. If, instead of open-wire line, the folded dipole is made from solid twin-conductor line such as 300Ω TV ribbon or perhaps from 'figure-of-eight' electrical flex, loudspeaker or bell wire, the velocity factor, k , of the line should be taken into consideration as follows.

Modified folded dipole

The overall length of the folded dipole remains $468/f$, but the length of the shortened parallel section is reduced by the velocity factor, k . The length of this section is therefore given by $468k/f$. See Fig 4.

I used the MFJ-259B Antenna Analyser to determine the velocity factor of the figure-of-eight clear lighting flex/loudspeaker wire used in the prototype mini-delta beam, and found it to be approximately 0.71. The length of the 'shorted' section is thus $468 \times 0.71/f$, or $332/f$, leaving $136/f$ for the end sections ($68/f$ at each end).

THE FOLDED DIPOLE HALF-WAVE LOOP

If, instead of bending a simple dipole into a loop (the input resistance of which drops from 72Ω to a few ohms), we take a folded dipole and bend that into a loop and, if its input resistance, now of some 300Ω, drops by the same order of magnitude, it should become a fairly good match to 50Ω coax. This was my reasoning. My knowledge of antenna theory is very limited and I would be happy for anyone to shoot me down in flames! However, the results obtained seem to suggest that this simplistic reasoning works.

Lengthening effect of the loop

As W6SAI explains in his book on quad antennas, bending a dipole into

a loop actually has a lengthening effect (there is no end-effect in this case). Although he suggested that the electrical or free-space wavelength ($492/f$) is increased by a factor of 1.028, my own experiments have suggested an empirical value of 1.024. Applying this to the free-space length produces the figure of $504/f$ for the overall length of a closed half-wave loop. If the velocity factor is now applied, the folded section should have an overall length of $358/f$, while each end-section is increased to $73/f$. These are the design figures I have used.

The 'Delta' design

As stated earlier, the delta configuration (named after the capital letter 'D' [Δ] in the Greek alphabet) was chosen, as this reduces the number of supports from four to three, for only a relatively small increase in support length. Each spreader is less than seven feet long - very short for a 20m antenna! An individual loop is shown in Fig 5. In the diagram, Q is the feed-point. In the formulas that follow, f is the design frequency.

INITIAL TEST RESULTS

As I operate largely on or about the IOTA frequencies (CW and SSB), I adjusted the resonant frequency of the prototype version of the 20m mini-beam to 14.150MHz. This was done with the mini-delta loop mounted only five feet above the ground on a light aluminium pole replacing the parasol of a patio table. At resonance, an MFJ-259B antenna analyser indicated an SWR of 1:1, indicating zero reactance and an input resistance of 50Ω. The measured bandwidth was about 240Hz (earlier tests on a very much 'Heath Robinson' five-band prototype, had produced very similar results). Raising the loop to 15ft above ground produced only a very slight rise in the resonant fre-

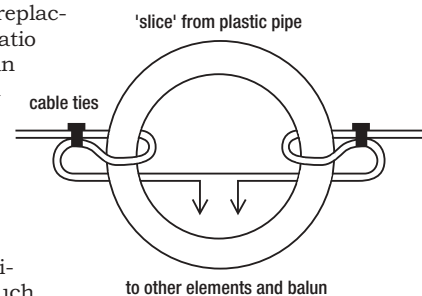


Fig 6: The mid-point of the folded element.

Mini Delta

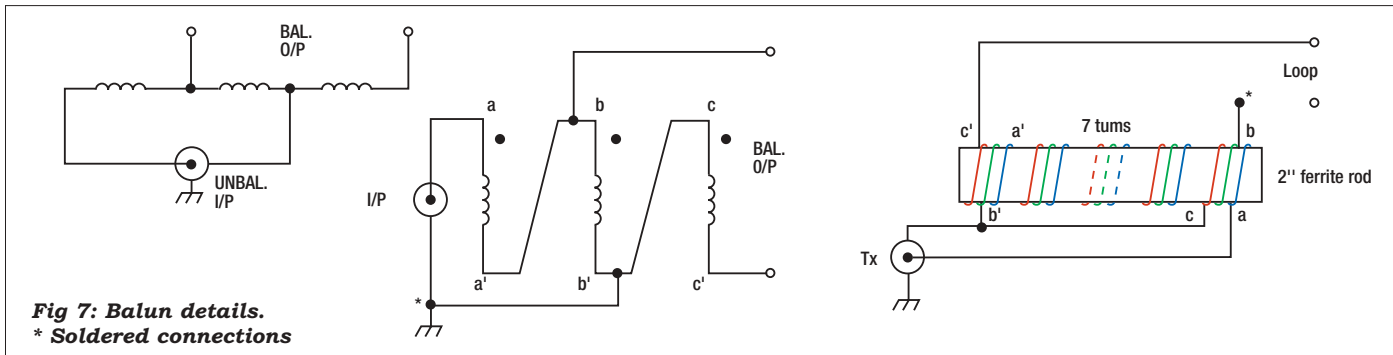


Fig 7: Balun details.
* Soldered connections

quency and no change in the input characteristics. At this height, several QSOs showed no discernible difference in signal strength at the DX end, when compared with my 20m inverted-V dipole 30ft up at its apex. At the receiving end, there was a barely discernible drop of about 2dB on the mini-beam.

CONSTRUCTIONAL HINTS

A suitable central support should be manufactured. For portable use, this could be a triangular piece of wood or plastic with four tubes to take, say, three garden canes and the short support for the feed-point and balun. Some sort of bracket to take a vertical mast is also needed. The design of this central support is left to the ingenuity and junk box of the individual constructor.

Small cable ties are used to attach the mid-point of the folded element for each band, to a suitable circular insulator as shown in Fig 6 (such as a 'slice' from 1 1/4in rigid plastic gas or water pipe, or a car exhaust rubber O-ring).

Distances QR' and QT' should be measured from the O' ring and points R' and T' marked (permanent marker or whatever) on each element.

The spreaders should be around seven feet overall to begin with, to allow for adjustments. They can be trimmed later. They should be measured from the centre of the support and marked for each band.

EXTRA LENGTHS

PS and PU are increased from 73/f by an amount 5/f to 78/f (corresponding to approximately 2in to 4in, depending on the band). An extra 2in of folded element section (1in for each side) is allowed for wrapping round the ring, after which one side of each element is split and all elements are then tied together and connected by short flying leads to the

1:1 balun. The middle loop (15m for a five-band beam) is an equilateral (equal-sided) triangle, but minor allowances must be made to the other elements to allow them to fan out. Table 1 summarises these allowances and all other relevant dimensions for a five-band mini-delta beam.

FEED-POINT

The loop is a balanced antenna system and is therefore fed via a 1:1 balun. In its simplest form, this consists of a trifilar winding on a short length of ferrite rod salvaged from a scrapped transistor radio. This is mounted in a small ABS plastic box held securely at the end of a suitable support OQ' (eg wooden dowelling or similar insulating material). Its length OQ' (ie from the geometrical centre of the beam to the centre of the ring) is calculated as follows:

$$OQ' = Q'R' \tan 30^\circ = 2ft \ 3\ 1/2in.$$

In practice, the support rod OQ' is made slightly longer.

To construct the balun, take three 16in lengths of 20 or 22SWG enam-

elled copper wire (ideally different colours), twist together about 10 times and wind seven turns onto a 2in length of ferrite rod. Make short connections between the windings as shown in Fig 7.

The output of the balun consists of short tails passing through the box to a two-terminal connector mounted on its lid. This connects to the common feed-points. A 3ft length of RG-58U coax is soldered to the balun input, taped to the balun support 'boom' and terminated in a 50Ω BNC female in-line connector. This allows connection to an antenna analyser or to the feed-line.

ANTENNA ADJUSTMENT

Short lengths of nylon fishing line or similar are attached to the loop ends, P, and the lengths of PS and PU are adjusted until resonance occurs at the desired point in each band. If desired, the beam may be rotated in the horizontal plane. The overall appearance of the beam is shown in Fig 8, with dimensions given in Table 1. ♦

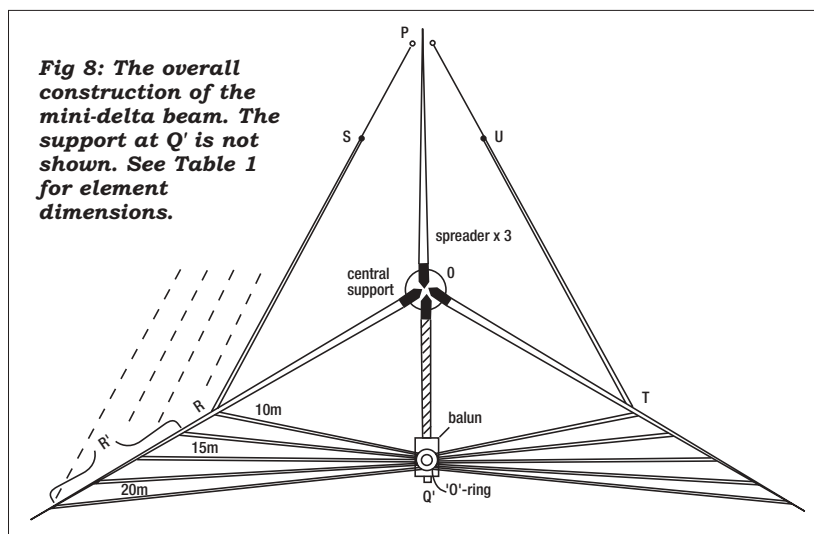


Fig 8: The overall construction of the mini-delta beam. The support at Q' is not shown. See Table 1 for element dimensions.

Table 1: All dimensions and 'allowances' for the five-band mini-delta beam.

| Design f (MHz) | QRS = QTU = 358/2f | QR = 504/6f | OR = QR/cos30° | Extra for fan-out | Q'R' (QR + extra bit) | SP = UP = 73/f | Extra 5/f to adjust f | SP' = UP' = 78/f |
|----------------|--------------------|------------------|----------------|-------------------|-----------------------|----------------|-----------------------|------------------|
| 14.175 | 12' 7 1/2" (+2") | 5' 11" (+1") | 6' 10" | 1 1/4" | 6' 1 1/4" | 5' 13/4" | 4" | 5' 4 1/4" |
| 18.110 | 9' 10 1/2" (+2") | 4' 7 1/2" (+1") | 5' 4 1/4" | 1/4" | 4' 8 3/4" | 4' 0 1/2" | 3 1/2" | 4' 2 1/4" |
| 21.225 | 8' 5 1/4" (+2") | 3' 11 1/2" (+1") | 4' 6 3/4" | 0" | 4' 0 1/2" | 3' 5 1/4" | 3" | 3' 7" |
| 24.940 | 7' 2" (+2") | 3' 4 1/2" (+1") | 3' 10 1/2" | 1/4" | 3' 5 3/4" | 2' 11" | 2 1/2" | 3' 0 1/2" |
| 28.300 | 6' 4" (+2") | 2' 11 1/2" (+1") | 2' 5 1/4" | 1/2" | 3' 1" | 2' 7" | 2" | 2' 8 1/4" |

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Photo by Tom Read M1EYP

This month includes a brief reminder of the Pic 'N' Mix features – and some hardware improvement options. The latter complement the performance of the STAR receiver front-end, details of which follow later – but they are of general application for any DDS.

PIC-A

PART 14 SOFTWARE TR

PIC 'N' MIX FUNCTIONALITY

Full details of the Pic 'N' Mix features and their use were given in *RadCom*, May 1999. It provides first mixer injection, band and mode switching and a range of useful features.

DDS KEY SEQUENCES

The keypad sequences are summarised in **Fig 25**. These include the increments for STAR operation.

Sequences shown with a leading 9 save the current frequency in the respective location if the 2-key sequence is preceded by the 9 (Save) key.

Pic 'N' Mix CODE CHANGES

The following apply to code shipped explicitly for use with PIC-A-STAR:

- The opportunity has been taken to de-bounce the keypad more vigorously. The simple consequence of this is that key presses now need to be somewhat more deliberate.
- CW offset calibration (previously 34) is no longer required, since the CW offset is now managed in DSP. The procedure for calibrating the reference clock and SSB IF offsets is unchanged. However, the reference clock frequency calibration may now be loaded directly from your PC. For IF offset calibration you will find it useful to switch the DSP filters off – so that you can hear *right* down to zero-beat. A CRO connected to the receiver audio output is also invaluable for seeing the exact zero-beat point. When both SSB offsets are correct, there should be a difference of precisely 2.7kHz between them.
- CW is now received either upper or lower sideband – so you have the choice of tuning direction. Either in the same direction as SSB signals

on the same band - or always tuning CW in the same direction whatever the band. The frequency readout always shows your transmitted frequency (not least for legal reasons) and your receive frequency is displaced from this by the CW offset – which is your chosen and preferred beat note.

- If you are in CW mode and you key 44 again, this will toggle reverse CW. This switches both receive sideband and injection frequency to give the same beat-note, but 'from the other side'. It can be useful in clearing QRM and for checking you are properly netted since if not, the beat note will change.
- Pic 'N' Mix now has 5MHz (60m) capability. The latch output previously marked '15MHz WWV' is now active if any 5MHz frequency is selected and – exceptionally – if you go to 5MHz, the default sideband is now USB. The first five memory locations (60–64) are loaded with the UK 5MHz channels. These are the correct frequencies for upper sideband operation. If you don't want this feature, you can re-program these allocations with any other frequencies (and re-enter the 5MHz ones yourself any time).
- You may now fit an AD9851 DDS chip which has the ability to multiply the reference clock frequency by six.

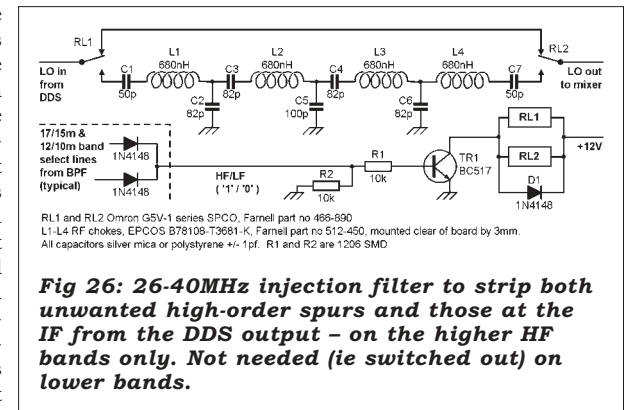


Fig 26: 26-40MHz injection filter to strip both unwanted high-order spurs and those at the IF from the DDS output – on the higher HF bands only. Not needed (ie switched out) on lower bands.

the keypad. This switch has been used to configure the STAR mixer and post-mixer amplifier to be described later.

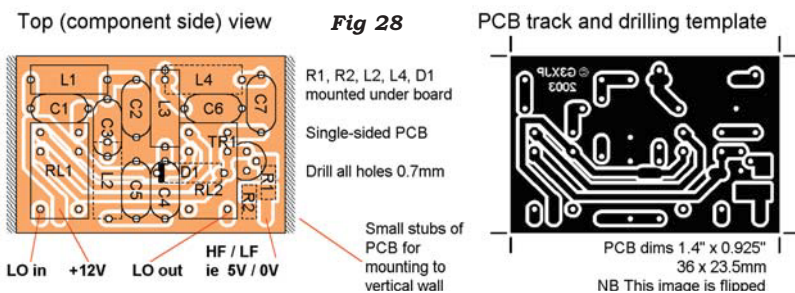
- The output bit labelled 'broadband' 72 is now a spare uncommitted toggle switch.
- QSK Split operation has been improved. Previously it was limited to about 20WPM.
- The frequency display is dimmed after about three minutes of user inactivity – to reduce heat dissipation and to prolong LED life. 74 toggles this feature on/off.
- All frequencies from 0–29MHz now activate the nearest band select line.
- RIT and XIT operation may be selected instead of Split. The # and * keys and the Rx/Tx A/B LEDs then change meaning. This is still under development. Detail follows.
- Part-way through any DDS key sequence, the # key now aborts it.

PIC 'N' MIX HARDWARE

Since first designing Pic 'N' Mix five years ago, some detailed improvements have evolved. What will never change is the requirement for meticulous (albeit textbook) screening, decoupling and filtering practice – if the DDS spur level is to be contained. This cannot be overstated and is the starting point for what follows.

The following modifications produce incremental reductions in DDS spurs and are easy enough to do to make them all worthwhile. If you are building STAR, I countenance you not

Fig 28: Injection filter component layout and PCB.



STAR

TRANSMITTER AND RECEIVER

to implement any of them until you have everything else working – and until you have truly attended to the meticulous bits just mentioned.

- Fit a separate 7805 regulator for the DDS chip carrier assembly. There is a simple track cut under the DDS board which removes the +5V rail from the DDS Assembly. Mount a separate 7805 on the rear vertical panel with 100n on both the 12V in and 5V out leads - and run a flying lead from the latter through a ferrite bead - and solder it to the 5V top foil on the DDS chip carrier together with a 100µF electrolytic to ground.
- Fit 1n, 10n, 100n 1206 capacitors – in a stack – on at least two corners of the DDS assembly from the +5V foil to ground. In other words, whatever it takes to ensure that the +5V rail and ground-plane are at the same AC potential - AF to VHF.
- Add a filter in the LO feed to the mixer. **Figs 26** and **28** show a suitable arrangement for high-side injection with any IF between 8MHz and 11MHz. This filter offers at least 30dB attenuation at the IF and a similar figure at 50MHz - and rising. If all else is right, this produces dramatic results. It does not need any exceptional screening if mounted within the already-screened volume of Pic 'N' Mix. It is shown switched in by band-select lines, diode-ORed. You should wire in diodes for any bands for which your LO falls in the range 26 – 40MHz. However, for evaluation purposes, it would be prudent to control it with a simple toggle switch to +5V / 0V in the first instance.
- You may simply substitute an AD9851 on the DDS Assembly in lieu of an AD9850 under *all* circumstances, ie it is completely hardware and software compatible. The AD9851 allows higher reference clock frequencies – which may be useful if you have a relatively high IF. This gets you away from the 1/3 reference clock zone. In addition, it offers a 6x multiplier option for the reference clock. So, for example, you could clock it at a mere 30MHz yet have the effective benefit of a 180MHz clock. There are small spur and significant phase noise performance disadvantages for which see the AD9851 data sheet – but convenience issues may

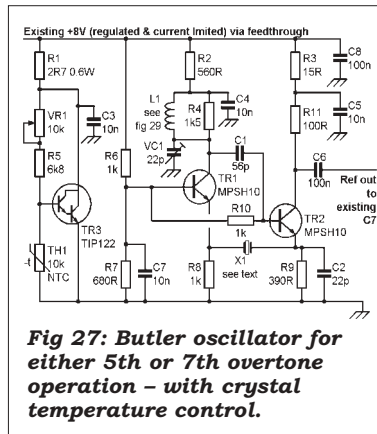


Fig 27: Butler oscillator for either 5th or 7th overtone operation – with crystal temperature control.

predominate for you. A facility for specifying a 6x clock is now built into STAR software. You may instead want to try clocking your existing AD9850 much faster.

Fig 27 shows a reference oscillator which will operate on either the 5th or 7th overtone of a crystal in the 22 – 25MHz range – simply by tuning VC1. Typically, the 5th overtone is used with an AD9850 and the 7th overtone with an AD9851. In this latter case, the x6 feature would not be invoked. Also included in Fig 27 is an arrangement for stabilising the crystal temperature, the detailed design of which is due to Harry, G3NHR. It works so well, I have since stuck (literally) a similar arrangement on my IF board translation oscillator. The thermistor, TH1, and the TIP122 tab are secured to opposite faces of the crystal can. Heat-shrink sleeving is highly recommended – or failing that, super-glue. For smaller crystals, cut off the excess

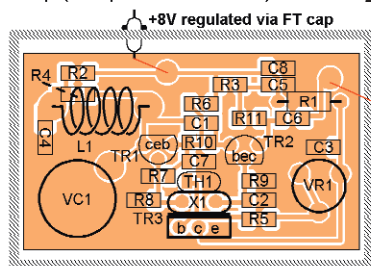
TIP122 tab to reduce height. Set VR1 to maximum resistance and then adjust for 100mV drop across R1. Repeat every minute for five minutes and the result should be a crystal thermally stable at 35°C. In use, the frequency will change rapidly for the first five minutes after switch-on – but stabilise thereafter. This is *not* an on-off oven. This is proportional control.

The small PCB, shown in **Fig 29**, is designed as a drop-in replacement – after simply removing the components from the original Pic 'N' Mix oscillator. • Fit transformer-coupled output from the DDS chip. This gives 6dB more LO output and further spur reduction. The core for this transformer is the EPCOS B62152A4X1 available from ElectroValue. (You will need four more of them for the mixer later). The primary is three bifilar turns 32SWG and the secondary is 12 turns wound over the top. The core is mounted in lieu of the 100R and 200R resistors on the DDS carrier. Connect the primary instead to pins 20 and 21 of the DDS chip, grounding the centre-tap. Ground one side of the secondary and take the other via a 100n blocking capacitor to pin 19 on the 28-pin carrier. If you are not confident your mixer will stand the extra 6dB, fit a pad on its LO port. (The STAR mixer – yet to be described – is fine.)

To reduce DDS spurs to a *highly* acceptable level (ie virtually none) you may or may not need any or all of these changes.

As with all flexible designs, there are intelligent user choices to be made. Such is *amateur* radio! ♦

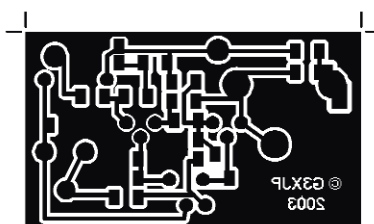
Top (component and track) view



L1 is 4t 22SWG wound on 6mm dia mandrel, 14mm long. VC1 is polyethylene film. All fixed resistors and capacitors are 1206-size SMD - except R1 which is 0.6W wire-ended - and C1, C2 which are ceramic plate

Fig 29

PCB tracking



PCB dims 1.75" x 1.025" 44.5 x 26mm
May be made from 1- or 2-sided material
NB This image is flipped

Fig 29: Reference oscillator component layout and PCB.

Fig 25: DDS key sequences.

- * - toggle between VFOs
- 0 - VFO A = VFO B
- # - Split operation
- 11 - select USB
- 44 - select CW – again for reverse CW
- 77 - select LSB
- 22 - toggle rate tuning mode on / off
- 26 - toggle software flywheel on / off
- ⊕ 31 - calibrate / save USB offset
- ⊕ 37 - calibrate / save LSB offset
- ⊕ 33 - calibrate / save reference clock
- 41 - go up to nearest kHz point
- 48 - toggle 'spare' latch output
- 47 - go down to nearest kHz-point
- 55 - monitor guard channel
- 56 - scan between memory frequencies
- 58 - scan frequency range (wobulator)
- 5* - scan both VFOs
- ⊕ 6x - where x is 0-9. Go/save to memory - may be used for 5MHz frequencies
- 70 - display tuning rate as bargraph
- 72 - spare user on / off switch
- 73 - go to SLEEP
- 74 - toggle display auto-dim
- 78 - display LSD as 10Hz / 100Hz
- 79 - toggle x6 ref clock for AD9851
- 81 - high side injection (default)
- 87 - low side injection
- 88 - signal generator mode (no offset)
- 88 - direct keypad frequency entry
- ⊕ 10, 12, 15, 17, 20, 30, 40, 60, 80, 16 - go/save to respective band
- 990 - save as power-on frequency
- 999 - reboot DDS software

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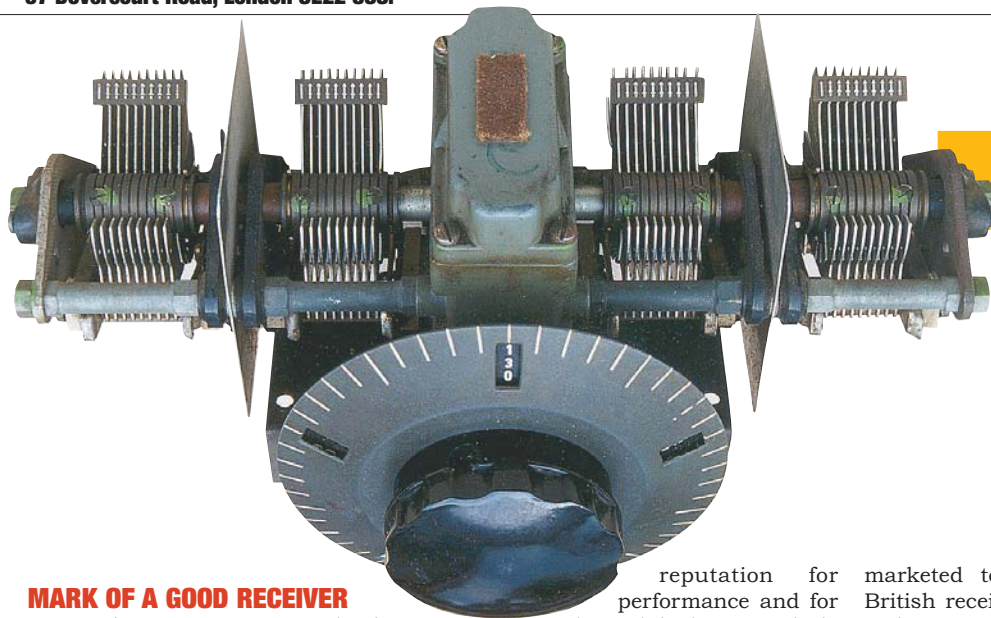
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MARK OF A GOOD RECEIVER

For as long as amateur radio has existed, the question of what constitutes the best possible receiver has been argued. For HF in the pioneering 1920s, the regenerative 'blooper' held sway, with the early superhets regarded as much too 'noisy' and subject to high levels of 'image' reception. It was not until the mid-1930s that the high-performance superhet communications receiver began to emerge from such designs as the National HRO and Hammarlund Super Pro. The HRO not only combined good electrical design but also superb mechanical features, with high-Q plug-in coil assemblies, the famous PW worm drive and 500-point control knob based on a British patent (see the photo).

It had two RF stages to reduce image, its 455kHz IF including an effective crystal gate filter with phasing control. It is not surprising that, in 1938, A H Mumford of the GPO (who had held an amateur licence in the mid-1920s) was able to recommend to the Wireless Board that this receiver should be adopted for use by the British 'Y Services'.

The HRO was soon adopted, not only by the Y Services and RSS, but also was widely used throughout the 1940s and beyond by MI6 Section VIII and post-war Diplomatic Wireless Service but also by the Royal Navy etc (second photo). It gained an enviable

reputation for performance and for 'operability', particularly for narrow-band CW Morse reception, shared only with the later and vastly heavier RCA AR88, designed in 1941.

As a wartime user of the HRO, my eyebrows were raised by comments by Ben Nock, G4BXD, in *Radio Bygones* (June/July 2003): "There always seems to have been a mystique associated with the HRO. This was probably generated and perpetuated by the National PR department; one has only to read the stuff in the old QSTs. The HROs were all electrically pretty good, and may have been the best available receiver at the time of their introduction. There was a feeling, however, that they were distinctly obsolete by about 1939. I mean, plug-in coils and no calibrated dial!"

"Distinctly obsolete by 1939"? Tell that to the marines, Ben - I don't think they used them and might believe you! I would argue that the HRO, marketed as an *amateur* communications receiver in 1935, with its superb mechanical design by James Millen, remains as possibly the only factory-built *amateur* receiver to have equalled or outperformed the best *professional* communications receivers over a period of more than five years. The AR88, although given RCA's 'Amateur Radio' (AR) designation, was designed to meet a British Joint Services specification and never

marketed to amateurs. A wartime British receiver, the Marconi CR150, with its two band-pass crystal filters plus 300Hz audio filter, was in this class (my old CR150 has retained its selectivity characteristics better than my old AR88 with its single-crystal filter)

Post-war, the lead in general coverage receivers has always been taken by high-cost models intended for the professional market, although perhaps the Collins 75A4 amateur-bands receiver came close. John Wilson in his excellent series of reviews in *Short Wave Magazine*, covering both amateur and professional models, although not concerned primarily with narrow-band modes, but backed up by bench measurements, generally rates the Racal RA1992 professional model as "probably the world's best" but, for a long time, the old valve receivers outperformed solid-state models.

There have been several articles recently examining what is now required of a high-performance receiver in terms of sensitivity, dynamic range, reciprocal mixing, etc. I have already mentioned in 'TT' 'The DX Prowess of HF Receivers', by Tadeusz Raczek, SP7HT (*QEX*, September/October, 2002, pp36-40). An even more recent article is 'Comprendre les Performances des récepteurs Radio', by Matthieu Cabellic, F4BUC (*Radio-REF*, June 2003, pp22-31). This provides a comprehensive survey of the required electrical performance of modern receivers including comparative tables of some VHF (Icom, Yaesu and Kenwood) receivers as well as HF models, based on ARRL lab measurements (see 'TT' December 2002). This pays special tribute to the performance of the front-end of the Drake R-4C, a hybrid valve/semiconductor receiver designed some 30 years ago, noted several times in 'TT'. Its weakness was its second mixer stage, although receivers modified by Sherwood Engineering overcame this problem (see 'TT' May 1997).

In general, F4BUC suggests the following electrical specifications for an amateur HF communications receiver: Sensitivity (MDS) with pre-amp 'on' -130dBm should be sufficient. ▶

The superb PW worm drive with 500 clear logging points, as used in the HRO from 1935 onwards. RSS found that, by fitting a small vernier scale alongside, this could be increased to 5000 logging points. This form of dial was originally patented in the UK for Sperry and was later manufactured under licence by Muirhead. The drive and ganged capacitors shown here came from a WWII German copy of the HRO made by Koerting, but was possibly a genuine PW drive made by National since it is thought that Germany was able to import components from the USA during the early war years via Spain and Portugal.



An HRO receiver in use in late 1944/early 1945 at an MI6/SIS Section VIII SCU9 outpost at Eindhoven, Holland. The transmitter is a Whaddon-built 30W MkIII (6V6-807). Above the HRO is a Whaddon MkVII agent transmitter-receiver used as a keying monitor.

► Dynamic range, third order intermodulation (IMD₃) of 95dB or more is judged excellent with pre-amp 'off' and a spacing of 20kHz. IP₃ and IP₂: with pre-amp 'off', an IP₃ of 15dBm is good and 20dBm excellent. With pre-amp 'off', an IP₂ of 55dBm is good and 70dBm excellent. Blocking dynamic (BDR) of 120dBm is good and 130dBm excellent with pre-amp 'off' and a spacing of 20kHz. Phase Noise: a good value is -120dBc/Hz at +10kHz offset.

My own, rather old-fashioned, view is that the 'operability' (ergonomics) of a receiver can be as important as the laboratory electrical specification. The operator who really knows how to use his receiver to best advantage can overcome some of its electrical weaknesses. I would argue that the HRO, rather than being obsolete by 1939 can, if well maintained and used by an operator who really understands how to use a single-crystal filter, still be an excellent CW receiver, although I have yet

to see a full electrical specification when measured using modern test equipment!

I7SWX's SWITCHED RING MIXER WITH FST3125

'TT' April 2003 presented a novel two-transformer version of G3SBI's H-mode mixer as devised by Giancarlo Moda I7SWX / F5VGU. The earlier H-mode mixer, developed by Colin Horabin, G3SBI, and first described in 'TT' using a SD5000 device in 1993 and then at the suggestion of I7SWX using an FST3125 in 2000 is now widely recognised as the state-of-the-art mixer, endorsed in ARRL's *Experimental Methods in RF Design*. The H-mode mixer is capable of superb large-signal performance. A

prime advantage of using the FST3125 (or equivalent) fast bus switches is that the reduced attenuation eliminates the need at HF of the pre-amplification required by the SD5000. Performance is only slightly degraded in I7SWX's two-transformer version and is well suitable, as a home modification, for the second mixer in some factory-built amateur transceivers.

However, as I7SWX now points out in a detailed article (for which there is space for only a shortened version): "Some of those amateurs keen on designing, building or modifying equipment may find they have a problem in upgrading a mixer circuit to the H-mode form. There are several reasons for this that have to be respected. As a result, I have been considering how to improve the popular double-balanced ring mixer (DBM), replacing the diodes and yet achieving a satisfactory result, even if inferior to the H-mode mixer.

"The answer seemed obvious - why not try the FST3125 in the now-conventional switched mixer as originally developed 30 years ago by Ed Oxner, KB6QJ, for Siliconix? He used four medium-power U310 discrete FETs, ('TT', March 1973), and later the equivalent Siliconix SD8901 integrated MOSFET array (Fig 1), see 'TT'

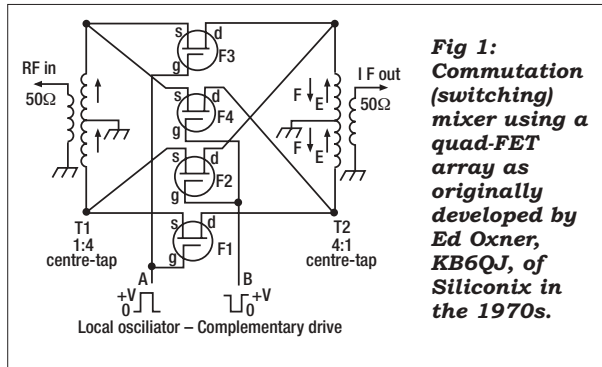


Fig 1: Commutation (switching) mixer using a quad-FET array as originally developed by Ed Oxner, KB6QJ, of Siliconix in the 1970s.

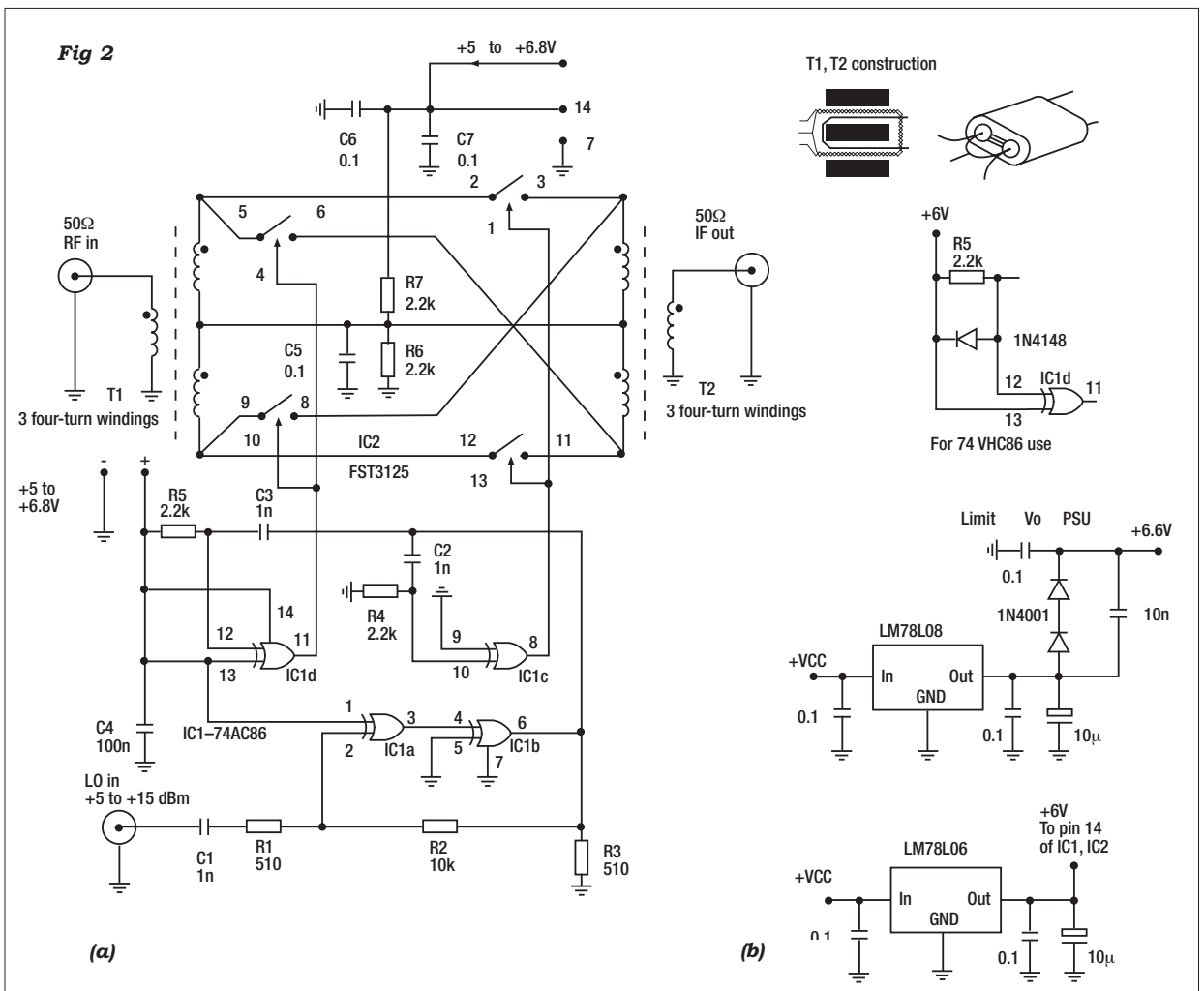


Fig 2: (a) The switching mixer using an FST3125 fast bus switch device and a 74AC86 squarer (the 10kΩ resistor may be replaced by a balancing adjustment circuit). (b) Two examples of suitable PSU arrangements for the mixer and a modification for gate D for use if a 74VHC86 is used (the diode has the function of a gate clamp).

October 1993 and February, 1994). This switched mixer offered an IP_3 in excess of +30dBm and had an attenuation of about 8 to 9dB. It was clearly superior to the classic DBM with Schottky diodes.

“Apart from the attenuation (requiring the use of a pre-amp when used as first mixer) the main deficiency was that, as the RF input signal level increases, this has a significant effect on true gate-to-source voltage needed to switch the FET ‘on’ or keep it switched ‘off’, increasing the IMD. This requires larger local oscillator amplitude and we may still have linearity problems due to the difference in the FET R_{on} resistance between negative and positive RF signal states.

“All these problems were addressed by G3SBI in developing the H-mode configuration. Here, the source of each FET is grounded, so that the RF signal switched by the FET cannot modulate the gate-source voltage.

“Fig 2(a) shows the I7SWX version of an HF switched ring mixer using the FST3125. The squarer is the same as that used for the two-transformer H-mode mixer (‘TT’, April 2003). The two transformers needed for a new design again used four turns for each winding so that I could directly compare the performance with the two-transformer H-mode mixer. Where the mixer is to be used to upgrade a DBM, the existing transformers can be used. There are, however, connection changes: the centre taps or joints of the two transformers must be disconnected and reconnected as in Fig 2(a); the modified mixer now has bias applied through a resistive divider and providing an RF ground at $V_{cc}/2$ as in the H-mode mixer.

Power supply to the mixer can be from +5V to +6.8V. Fig 2(b) shows two examples; a 78L06 can provide +6V or a 78L08 followed by two series diodes (1N4001 or similar) to reduce the voltage to about +6.8V. The squarer, as already mentioned, uses the 74AC86 as in the two-transformer H-mode mixer. A 74VHC86 or similar could be used in which case a diode clamp is needed on XOR gate D.”

I7SWX has provided detailed measurements of the performance of this mixer. In brief: the attenuation is around -5 to -6dB for IF outputs from 500kHz to 46MHz and -7dB for IF output between 70 and 100MHz, as

measured on his HP141T spectrum analyser (for safety, assume -0.5 or -1dB added to these values). IMD at various IF varies between about 80 and 89dBm, Delta between 64 and 72.5dBm and IP_3 between +22 to +26dBm.

I7SWX comments: “The mixer attenuation and the IP_3 show a useful improvement on the DBM, the local oscillator drive requirement just a little higher than for +5 to +10 or 15dBm, as second of the LO frequency associated with the IF one.” [I7SWX’s detailed measurements will be sent to interested readers on receipt of an SASE - G3VA]

“We thus have another solution to improve some of our older home-built projects and a lot of the commercial equipment where DBMs with diodes have been and still are used. Even for the FT-920, FT-1000, and similar equipment where there is some similarity between the first ring mixer with four FETs and the Ed Oxner switched ring mixer, it might prove interesting [as an experiment by an experienced modifier with appropriate test equipment] to replace the FETs with the FST3125 and see if any improvement (or the opposite) is achieved, although this is speculative as it has not been tried.”

I7SWX has been in touch with Wes Hayward, W7ZOI, in respect of his two-transformer H-mode mixer and with Bill Carver, W7AAZ, in respect of the use of an FST3125 in a ring mixer. W7ZOI felt that more detailed IMD measurements were needed on the two-transformer H-mode mixer, and these have since been made in association with Maurice Cavat, F5NRZ, using his HP8562B spectrum analyser (IMD around -80dBm) on the two-transformer H-mode mixer. W7AAZ commented positively on the FST3125 ring mixer, but queried whether it is wise to go back to the Oxner approach of the 1970s rather than ‘invest’ in the H-mode mixer.

Nevertheless, the I7SWX conventional ring mixer with FST3125 represents a good improvement when compared with the still commonly-used DBMs such as the SBL-1 with an IP_3 of somewhere about +10 to +15dBm. It should prove easier to modify existing equipment than to install an H-mode mixer.

MORE AMBITIOUS SOFTWARE RADIOS?

Some of us are still trying to come to

terms with software-defined radios as representing the way ahead. I must confess to having no personal experience of them, and feel that, for amateur radio, it may be, at least in some respects, that the jury is still out. To quote a recent article in the ‘Life’ section of *The Guardian* (July 10, 2003): “Instead of specialist radio hardware, a software radio uses a simple receiver to throw the entire contents of a range of frequencies into computer memory, where software, and not hardware, does the signal processing.” Currently, most DSP in amateur receivers is carried out at relatively low frequencies while retaining an elaborate, complex and hence expensive front end.

Dave Roberts, G8KBB (the software brains behind the CDG2000 transceiver), feels that we should already be discussing “whether our software-defined radios lack ambition.”

He writes: “Is this the case? At the moment, we appear, in both amateur, commercial and homebrew, to be following classical ideas of radio design to translate an RF signal to very low IF, such as 15kHz and then using slow, well established software techniques. Lacks ambition? Perhaps not - PIC-a-STAR, as described in *RadCom*, is elegant and sophisticated. Where next though?

“It has long been asserted that it is getting harder for amateurs to participate in leading-edge developments - components are too small, things too complex. It seems to me that complexity has potentially made it easier for us to participate.

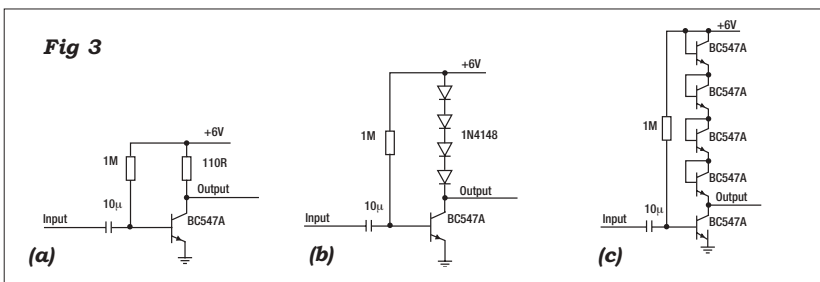
“The obvious approach is to use the recently-developed digital RF devices from manufacturers such as Analog Devices, and from these we could produce excellent designs. But why not go further?

“Many of the professional members will be well aware of FPGAs and languages such as VHDL, but many amateurs are not. FPGAs (Field Programmable Gate Arrays) are complex logic devices of many logic building blocks that may be configured to create arbitrary logic circuits (within reason). VHDL is a computer language used to specify a desired functionality that can be synthesised by automated tools into a form for loading into an FPGA. A typical device such as the Xilinx Virtex II series can contain between 50,000 and eight million gates, provides up to 168 fast-multipliers of

Fig 3: (a) Voltage amplifier with resistive load. (b) Amplifier exhibiting less non-linearity using a non-linear load comprising a diode string. (c) Even less non-linearity using diode-connected transistors as the load.

| Input signal amplitude (mV) | Non-linear distortion factor (%) | | |
|-----------------------------|----------------------------------|--------------|-----------------|
| | (a) diodes | (b) resistor | (c) transistors |
| 1 | 0.0057 | 0.9 | 0.00062 |
| 10 | 0.058 | 0.96 | 0.0056 |

Table 1. Comparison of (a) diode, (b) resistive and (c) diode-connected transistor loads in bipolar voltage amplifiers. (Source Electronics World)



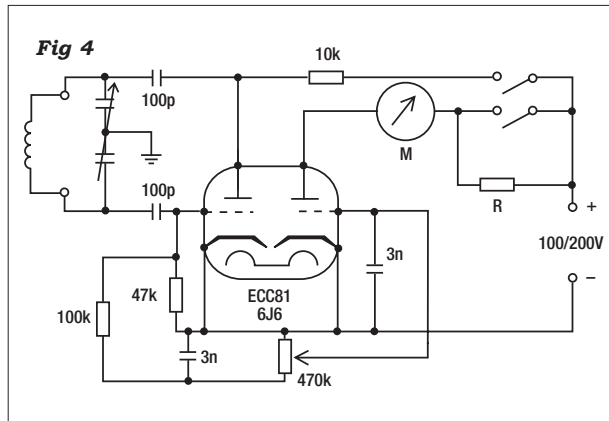


Fig 4: Two-stage GDO using a double-triode, as found by G3ESB to provide excellent service for more than 40 years. It can be used with a meter with an FSD from 2 to 6mA (meter sensitivity is adjusted by varying the voltage dropper, R, in the second stage).

18-bit words, possesses up to 1Mbit of memory and handles clock speeds into the hundreds of MHz. Devices even at the smaller end of this range could be used to implement transmit and receive functions at HF – with digital filtering provided by the on-chip multipliers at RF. A typical transmit design is shown on the web by IV3NWV which uses a small FPGA. Is this the way ahead?

“Hard to design? Well, no. The tools are freely available for the lower-end devices, and allow the synthesis of designs, their simulation and download to the devices. Designs for the building blocks such as CORDICs are freely available.

“These are big beasts, though. Typically they are available in BGA packages with between 250 and 1500 pins. Impossible? Well, no – tricky, yes – but possible.

“So, how about this. A standard amateur module with high speed Analog Devices 14/16-bit ADC and DACs connected to a Virtex II FPGA, tightly coupled to a DSP such as the Analog Devices SHARC ADSP-21060L? The spare hundred-odd digital IO lines of the FPGA are available for control uses. While one might handle all functions in the FPGA (one can even download, for free, the VHDL of complete embedded processors that can run in an FPGA), it seems logical to let traditional software handle the low frequency stuff. The generic module could be used to create synthesizers, analysers, transceivers and similar functions. An interface such as USB would allow tight coupling to a PC.

“It would make a most interesting experimental vehicle for us. So, why am I writing this and not just building it? Well, George Fare, G3OGQ, and I are looking at it as the next logical extension from the CDG2000, but there are costs. Devices purchased ‘one-off’ are expensive. The PCB should really be six-layer, so the more people the merrier. Any takers? Serious offers only please!

“It may be that this makes no sense at all, in which case feedback to that effect will save us much wasted effort. Maybe it will spark some debate.

Replies via the CDG2000 mail reflector or via the WARC website (www.warc.org.uk.”

LINEAR BIPOLAR VOLTAGE AMPLIFIERS

George Cripps, G3DWW, draws attention to a novel method of greatly improving the linearity of voltage amplifiers using bipolar transistors described by S Chekcheyev of Moldavia in the ‘Circuit Ideas’ feature of *Electronics World*, July 2003, p33. As G3DWW puts it: “This is an item that I feel could have an effect on the design of ultra-linear RF amplifier stages for receivers and possibly also oscillators. The simplicity of the method looks very attractive.”

S Chekcheyev points out that the base current and the collector current of bipolar transistors are not directly proportional to the base-emitter voltage, resulting in a degree of non-linear distortion when bipolar transistors are used as voltage amplifiers with a resistive load (Fig 3(a)). He claims that this non-linearity can be compensated by using a non-linear load.

One method of doing this is to use a string of diodes as the collector current load: Fig 3(b). Here the collector current is proportional to the exponent of the base-emitter voltage. The voltage across the diodes is proportional to the natural logarithm of their current. It follows that the non-linearity of the diodes neutralises the non-linearity of the bipolar transistor. The voltage across the diodes becomes directly proportional to the base-emitter voltage of the bipolar transistor. The voltage gain coefficient of the circuit is equal to the number of the applied diodes; in this case, four.

This arrangement was compared with a PSPICE simulation (at 1kHz) of a conventional voltage amplifier with resistive load as in Fig 3(a). The 110Ω load resistor provides the same incremental resistance as the diodes, and thus the same voltage gain. As shown in Table 1, the diode load circuit has approximately 1/150 of the non-linear distortion of the resistive load circuit.

However, even better compensation can be achieved by using a string of bipolar transistors of the same type, rather than diodes as the load, as in Fig 3(c). It is claimed that the non-linear distortion now becomes approximately 1/1500 of that of the voltage amplifier having a conventional resistive load, see Table 1.

S Chekcheyev adds that a non-linear load can sometimes be used in voltage amplifiers instead of large amounts of negative feedback: “This is especially convenient for high-frequency arrangements. Another advantage of the non-linear loads is that they are not sensitive to variations of supply voltage and temperature.”

A TRUSTED GDO

Alan Hitchcock, G3ESB, was interested in the July ‘TT’ item on ‘GDOs

Dated & Updated’, that described several forms of valve and solid-state GDO. He writes: “It brings to mind my own experience with the ‘Two-Stage Grid Dipper’. [The circuit diagram was originally noted in an early ‘TT’ (November 1959) and subsequently included in all seven editions of *Amateur Radio Techniques* (now out of print) – G3VA] My own instrument is now over 40 years old. It has given and still gives yeoman service. It’s only vice is the need for a mains supply but, as its use is mainly in the shack, this is of no consequence.

“My colleagues, who occasionally use it, confirm my enthusiasm for this unit. Some years ago, I constructed for a friend a GDO kit from Cirkit using a design extensively publicised in *RadCom* and the *Radio Communication Handbook*. This proved virtually useless, being full of birdies akin to the Australian bush, with all the budgies in the universe! It also had a dial so small as to be unreadable without an eyeglass. Another colleague has recently built a GDO to a PW design with similar results, so he borrows mine!

“I think this says a lot about the two-stage valve GDO of yesteryear.”

The circuit diagram of the two-stage valve GDO (Fig 4) was attributed in 1959 to ‘one of the Continental journals’. In this arrangement, the second triode section of a double-triode such as the ECC81 or 6J6 is used as a DC amplifier (valve voltmeter), permitting the use of a meter with an FSD of from 2 to 6mA. The double-pole switch enables the instrument to function also as a field-strength meter with the sensitivity of the meter adjusted by selecting the value of the voltage dropper resistor, R. The relatively low value (47kΩ) grid-resistor of the oscillator stage should inhibit the generation of ‘birdies’ – as confirmed by G3ESB.

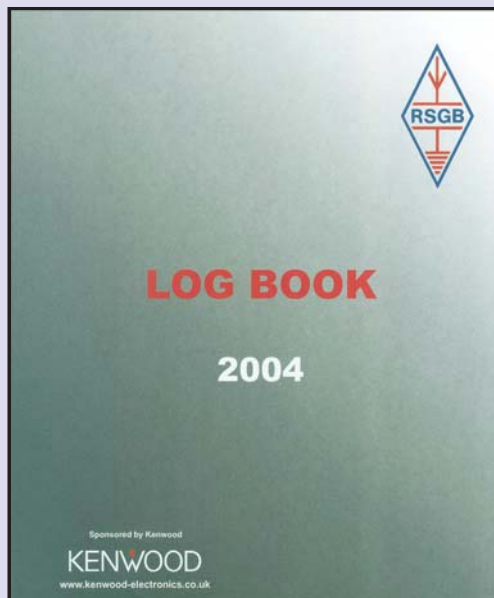
HERE & THERE

John Haliburton, GM4AQO, recently found in a ‘presentation’ copy of the *Edinburgh Evening News* of 11 July, 1932 a news item headed ‘To Improve Radio’, reporting that the British Polar Year Expedition had left London for the North Pole. The party, under the direction of Professor E V Appleton, was taking 10 tons of equipment for installation at Tromsø, Northern Norway including apparatus to “count the number of electrons in a thimbleful of air, 130 miles above the North Pole... The polar radio route [to Canada etc] is much the quickest, but observations in the Arctic have shown that many signals passing over the polar ice-cap give less satisfactory results than those passing through temperate regions. Discovery of the cause of this phenomenon is likely to improve radio communication considerably.” 70 years later, Polar Cap Absorption is still a problem! ♦

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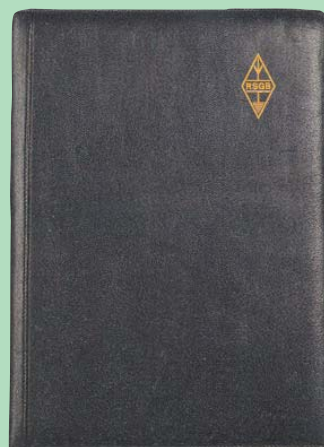
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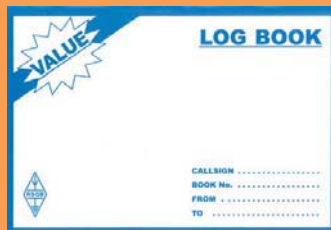
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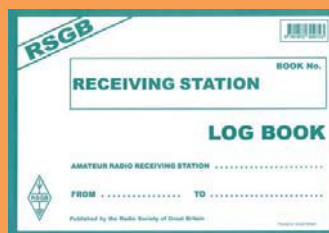
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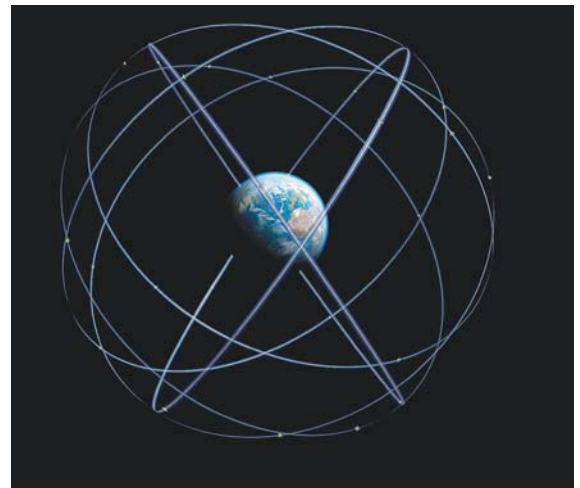
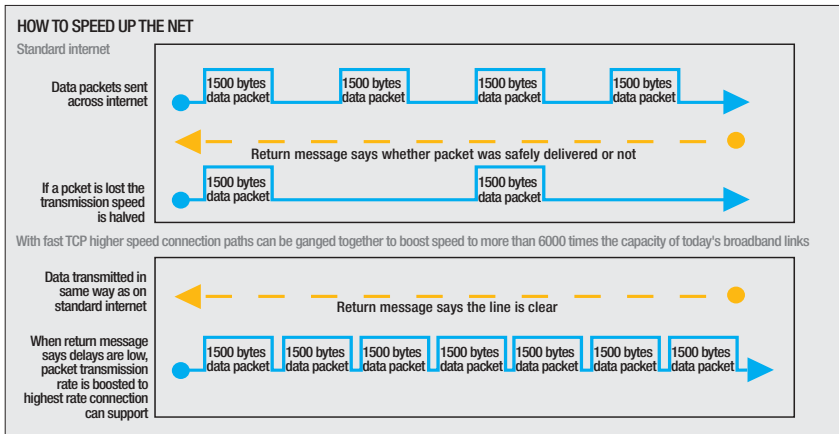
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Above, left: Fig 1: TCP/IP transmission compared to Fast TCP.

Above, right: The Galileo navigation system will consist of a constellation of 30 satellites.

GO-FASTER TCP

At the moment, TCP/IP is pretty-much the world standard transmission protocol for data; not only for the Internet, but also for most other things. As a protocol, it has been around for a good many years. Other protocols that might have greater throughput have been developed, but they haven't achieved enormous popularity, partly because they are incompatible with the huge amount of equipment across the world that carries TCP traffic. Now, the California Institute of Technology (Caltech) has come up with a possible successor to TCP/IP - called Fast TCP - part of its attraction being that it is compatible with existing transmission hardware.

To understand how Fast TCP works, it is useful to compare it to standard TCP/IP, which breaks data down into packets which are about 1500 bytes in size. See the top half of **Fig 1**. In addition to the data, each packet contains the addresses of the sender and of the recipient. When a packet of data is sent, an acknowledgement needs to be received before the next packet is sent. Already this means that the system cannot carry data particularly efficiently, but when a packet of data or an acknowledgement becomes corrupted or is lost the transmission rates drop dramatically.

Fast TCP differs from standard TCP/IP, not in the length of the packets - they are still about 1500 bytes in length - but in the software that 'drives' the system. There is also a difference with the sending computer, which now needs to measure the time it takes for packets of data to arrive at their destination and how long acknowledgements take to come back (the receiving computer remains the same). When this has been determined the sending computer optimises transmission by predicting and adjusting the rate at which packets of data are sent. The second difference is that Fast

TCP systems can be ganged together to provide faster transmission rates still. In the first practical test of Fast TCP, researchers at Caltech in California sent data 10,000 kilometres to CERN in Switzerland at an average rate of 925Mb/s. Standard TCP managed 266Mb/s on the same routes. By ganging ten Fast TCP systems together, the Caltech researchers have achieved transmission speeds of over 8.6Gb/s.

Of course Fast TCP isn't going to make a domestic phone line or broadband connection transfer data at greater rates than they currently can, but what it will do is to smooth part of the path between the two ends of a transfer. Fast TCP will also pave (part of) the way towards *Internet 2*, the infrastructure for which is currently being developed for scientific data transmission between 200 universities around the world.

According to *New Scientist*, Fast TCP could result in "an Internet connection so fast it will let you download a whole movie in just five seconds, or access TV-quality video servers in real time". Not surprisingly, Microsoft and Walt Disney are apparently expressing quite an interest in this.

COMPETITION FOR GPS

If you're one of the millions of Global Positioning System (GPS) users worldwide, you might be interested to know that within five years an alternative system is expected to be operational. Named Galileo, it is a civil venture which is to be jointly undertaken by the European Space Agency and the European Union, although final agreement as to who pays what has not been reached.

So what's wrong with GPS and why do we need a third system (the Russians also have a system called Glonass)? Well, not to put too fine a point on it, the satellites used in the GPS network are getting on a bit now. This is not to say they couldn't be replaced, but the system would still only be GPS, and Galileo offers additional facilities. Based around 30 satellites (27 in use and three spare) that will orbit the earth in circular orbits inclined at 56° to the equator at an altitude of 23,616km (see the illustration), Galileo is expected to provide excellent coverage. A broad range of applications will be supported by Galileo; control of road, rail, air and sea traffic, synchronised data transmission between computers, and many others. It will also feature a two-way channel for global search and rescue.

Galileo is intended to complement GPS, but will exceed GPS in two vital areas. Firstly, although it will not be as accurate as the military version of GPS, Galileo will be more accurate than the civilian version. Secondly, by employing UWB technology, Galileo signals will be able to penetrate buildings, which GPS signals generally don't.

The first experimental Galileo satellite is expected to be launched in 2005, with three or four further test satellites to follow in 2006. ♦

next

| WEB SEARCH | |
|------------|---|
| Fast TCP | http://netlab.caltech.edu/pub/papers/fast-030401.pdf |
| Galileo | www.broadbandreports.com/shownews/28987 |
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In practice

SMALL INDUCTORS

Q I am building a filter for VHF. How do I make small inductors accurately to a design value? The standard formula doesn't seem to work. And how do I adjust these coils?

A The 'standard formula' for calculating inductance applies to a single-layer solenoid as shown in Fig 1, and is:

$$L = \frac{n^2 r^2}{9r + 10b}$$

where

- L = inductance (microhenries),
- n = number of turns,
- r = coil radius (in),
- b = coil length (in).

This was published by Wheeler in 1928, and although there are many more elaborate formulae, Wheeler's still offers the best combination of simplicity and acceptable accuracy... or at least, it does for inductors resembling Fig 1.

The main problem with the very small inductance values that are used at VHF/UHF (a few hundredths of a microhenry, a few tens of nanohenries) is that the coils have few turns and quite a significant spacing between the turns (Fig 2), which is contrary to the basic assumptions of Wheeler's formula. There are several programs available on the web that attempt to deal with these problems in small coils. One of them is *WAIRL* from ALK Engineering [1], which attempts to simulate the practical approach. In practice, you generally have to specify a diameter and use a whole number of turns (Fig 2) and then stretch or compress the spacing between turns to obtain the required inductance. The computer program uses a similar method. Start by specifying a diameter that can be wound on the smooth end of a standard drill. The program makes an informed guess at a suitable whole number of turns, and then goes through a few cycles of trial-and-error until the correct solution emerges. Although *WAIRL* can sometimes be fooled, it will usually give helpful indications of the correct diameter, number of turns and overall length.

A problem with low-value inductors is that the lead inductance can be quite a significant part of the total.

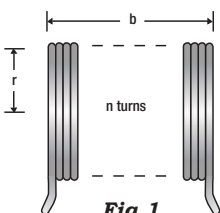
Another problem, applying to all inductors, is that they also have self-capacitance which makes the *apparent* inductance change with frequency. Small coils typically used in VHF / UHF filters will typically have a self-resonant frequency of a few GHz, so the effect of self-capacitance is quite noticeable (especially at harmonic frequencies) and should be included in the filter design. In addition, the inductance decreases if the coil is mounted close to the conducting ground-plane of a PC board. For all these reasons, it isn't worthwhile to spend too much effort on perfecting the calculation, because you'll always need to adjust the coil in the situation where it's being used.

A more practical way to make a small coil with a specified inductance is to connect it to a fixed capacitor of known value, calculate the correct parallel-resonant frequency, and then fiddle with the coil until

a grid-dip oscillator (GDO) shows the correct resonant frequency. If you are making coils for a PC board layout, the closest approach to the correct results will be to build a little jig that simulates the ground plane, and has a small ceramic chip capacitor connected with the shortest possible leads to the rear side (Fig 2).

So how do you adjust the inductance? Compressing the length of the coil will increase the inductance a little, while stretching the coil will reduce it (gently insert a knife blade between the turns to ease them apart). However, compressing and stretching will only change the inductance by about ±10%; larger changes will involve increasing or decreasing the number of turns, and/or chang-

Fig 1: The standard (Wheeler) formula applies best to this kind of solenoid inductor.



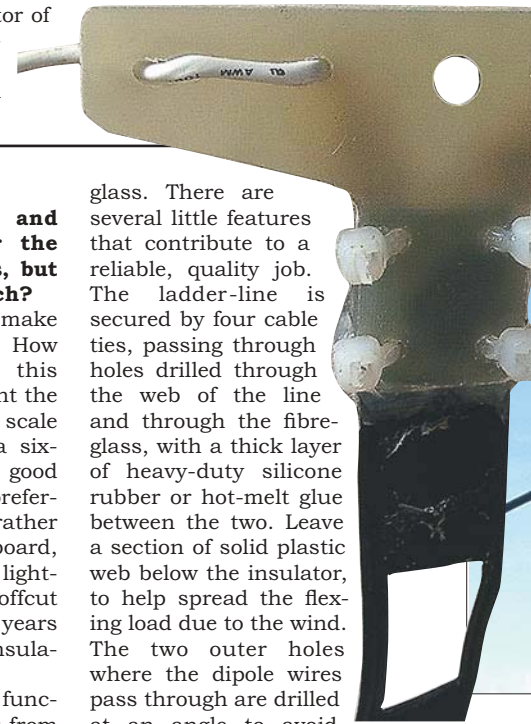
ANTENNA INSULATORS

Q I've seen the plastic and ceramic insulators for the centre and ends of dipoles, but what about the DIY approach?

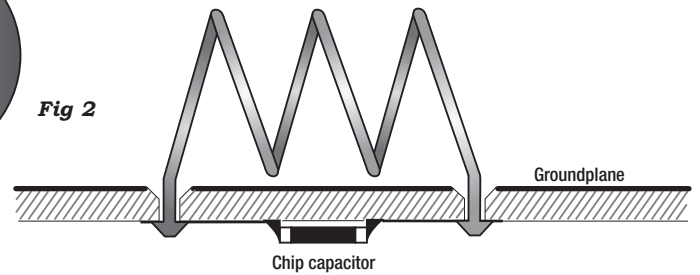
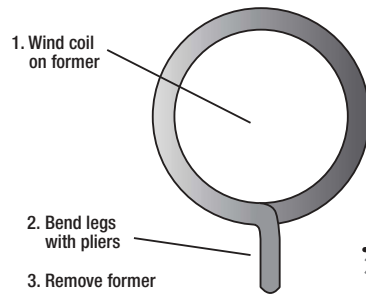
A There are many ways to make these insulators yourself. How much effort you put into this depends on how long you want the insulator to last (the time scale starts at: plastic top from a six-pack = 1 weekend). A very good material is fibreglass sheet, preferably about 3mm thickness rather than ordinary 1.6mm PC board, although that will do for lightweight antennas. I found an offcut of 3mm sheet at a rally some years ago, and have been making insulators from it ever since.

You can make a perfectly functional dipole centre insulator from a double screw terminal block ('choc block') and it will probably last several months before it corrodes inside and/or one of the wires breaks. For a more permanent job, the photograph shows a centre insulator for with 450ohm ladder-line, made from sheet fibre-

glass. There are several little features that contribute to a reliable, quality job. The ladder-line is secured by four cable ties, passing through holes drilled through the web of the line and through the fibreglass, with a thick layer of heavy-duty silicone rubber or hot-melt glue between the two. Leave a section of solid plastic web below the insulator, to help spread the flexing load due to the wind. The two outer holes where the dipole wires pass through are drilled at an angle to avoid kinking the wire (in practice, drill through at right-angles first, and then gently rock the drill sideways). The dipole wires are soldered to the stripped ends of the ladder-line, and then each joint is completely covered in hot-melt glue. The central hole for the hang-



ee

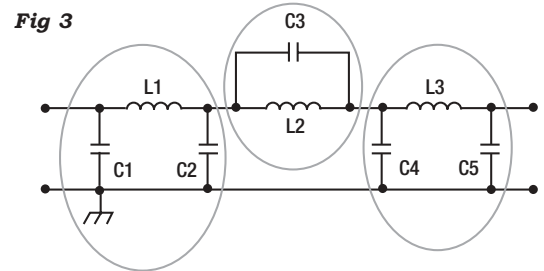


ing the diameter. Replacing the complete coil isn't difficult because it's very quick to wind another (Fig 2). An even quicker way to reduce the number of turns is to snip whole turns out of the middle and then join up with solder. Another good way to see whether you need more or less inductance is to hold either a dust-iron core or an aluminium core next to the coil (a brass bolt will do instead of the aluminium core). Try holding one of these close to the coil on the end of an insulated trimming tool or a wooden cocktail stick. If the inductance moves closer to the target with the dust-iron core, then add more turns, increase the diameter and/or compress the coil lengthwise. If the aluminium or brass moves the inductance in the

turns, decrease the diameter and/or stretch the coil.

These practicalities mean that the best way to use a program like *WAIRL* is to design a close-wound coil for a little more inductance than you need, and then expect to stretch it and/or snip out turns.

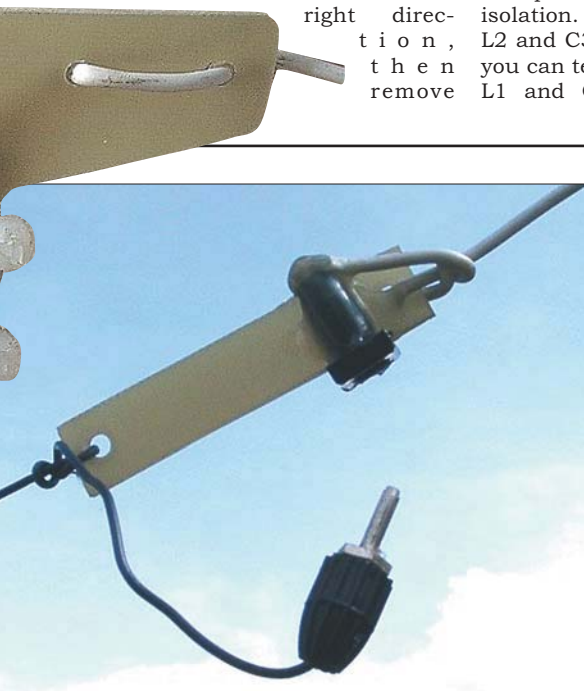
When you have pre-adjusted the individual inductors to the correct values, the complete filter will probably be quite close to optimum. Further tweaking will depend on the equipment you have available. If you can make swept-frequency measurements, you don't need further advice from me; but if you can't, you can still do a lot with a GDO, a calculator and an SWR bridge or 'antenna analyser'. The trick with the GDO is to 'dip' various parts of the circuit in isolation. For example, by removing L2 and C3 from the circuit of Fig 3, you can test the mesh formed by C1, L1 and C2. Since you know the



design values of all three components, you can make final adjustments to L1 to give the calculated resonant frequency for that combination. Then you can repeat the adjustments for L3-C4-C5, and finally for L2-C3 in isolation. The SWR bridge is used to make fine adjustments to the impedance match at the operating frequency, and the trick with the dust iron and aluminium cores comes in very useful here.

Fig 2: A more typical low-value inductor, also showing a test jig for adjustment in a PC board environment using a GDO.

Fig 3: By dividing a network into isolated 'meshes' (remove other connected components) you can adjust each inductor in position using a GDO.



large, heavy chunks of ceramic or plastic – they can often be no more than short lengths of strong fishing line. Use monofilament line to shed the moisture, and then you can change to stranded line if you wish. Alternatively, just about anything made of plastic with a couple of holes a few centimetres apart will make a good RF insulator (this really should exclude the traditional coat buttons, because the holes are so close they can easily be bridged by rain-drops). Once again,

by a plug-in connection for band switching. If you don't mind the inconvenience of letting the antenna down, this method has far lower losses than any kind of trap. Instead of the traditional crocodile clip, which will rust badly after a very short time outdoors, I've used a silver-plated wander plug connection that will carry high current, won't fall out and will last for years [2]. The socket is secured to the fiberglass strip by hot-melt glue, which is also used to fix the simple twisted loops in the antenna wires. (Tip: once heated up, the glue gun can be unplugged and used outdoors for several minutes.) As always with fiberglass, countersink the holes to avoid chafing the wires.

Left: Fiberglass sheet makes a good dipole centre insulator. Right: 'Band-switching' insulator using wander plug and socket.

ing rope is countersunk on both sides, or else the sharp edges of the fiberglass will chafe through the rope. And that's it! Using a jigsaw to cut the fiberglass, the whole job took about twenty minutes (excluding time for the glue to set) and it should last for years.

3mm fiberglass is a good material because of its high strength /weight ratio. You could get two nice little end insulators out of the spare material cut away from the centre insulator in the photograph.

The second photograph shows a more elaborate kind of fiberglass insulator, one that can be bridged

NOTES AND REFERENCES

1. <http://www.alkeng.com/wairl.html> – use the link from the 'In Practice' website.
2. **Belling Lee 'OZ' series**, often seen on surplus equipment, and still available from Farnell. Search www.farnell.com/uk for order code 317100 (3mm range) or 317184 (4mm range).

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By Peter Dodd, G3LDO, 37 The Ridings, East Preston,
West Sussex BN16 2TW. E-mail g3ldo@ukonline.co.uk

Many members may wish to try HF operation now that the Morse requirement for access to HF has been formally abolished in the UK. The author offers his thoughts on adding an HF antenna to your existing VHF/UHF antennas.



Fig 1



Fig 2

Antennas

You may also wish to add another band to your existing single-band HF beam, so what might be the best approach? You could try fixing a dipole using the existing mast as a support, as described in [1], but the existing antenna system might not be suitable for such an arrangement. My antenna system is a case in point. I have a 14m (48ft) mast, which is currently supporting a 136kHz LF antenna and there is no room for any other wire antennas.

ADDING AN HF VERTICAL

You could try a vertical mounted on the existing mast. The late G2XK fixed a 21MHz vertical above his 6-element 10m beam, which gave excellent results. In the past I have added a 14MHz vertical above an existing 21MHz metal quad and this also gave good results.

For a quarter-wave vertical to work, it has to be fed against a ground plane or radials. In both cases described above, the mass of the metal of the beams provided a suitable ground plane.

If the vertical were to be fitted to a mast supporting only a relatively small VHF antenna, would it still work? In the case of my LF antenna, the only metal at the top of the mast is a 3.5m length of aluminium tube that acts as a spreader for the two wires that make up the LF antenna; I was interested in seeing how a vertical would perform in this situation.

The method of fixing the vertical to the top of the mast is shown in Fig 1. Originally, there was a short

stub mast, which was used to carry nylon bracing cords to prevent the spreaders drooping under the weight of the wire and insulators of the LF antenna. The stub mast was modified by insulating it from the spreader support plate using rubber insulating material and U-bolts. The top of the stub mast was modified so that the vertical element could be plugged in and the joint tightened using a hose clamp. The antenna is fed with 50Ω coax, the centre being connected to the vertical element and the braiding to the support plate.

PERFORMANCE

Although the vertical was known to be a quarter-wave resonant at 14.1MHz, the antenna feed impedance, as indicated by the VSWR, was a long way off 50Ω. The problem was fixed by connecting a quarter-wave-long counterpoise wire directly to the support plate. The length of this wire could be shortened at the insulator (to increase the resonant frequency of the antenna) by folding some of the wire back along itself and fixing with insulating tape.

The 14MHz vertical fixed to the top of the LF antenna mast is shown in Fig 2. The top vertical element is only 2.5m long because, when the mast is folded over, that is the distance from the top of the mast to the end of the garden. The element is resonated using a centre-loading coil. Lack of space precludes a description of the loading coil, but it is described in [2].

The coax feeder to this antenna is

rather long – some 60m – so it was important to get the VSWR down as low as possible to minimise signal loss.

First impressions indicated that the performance of this vertical was very similar to my two-element minibeam mounted on the chimney of the house at about 10m (30ft) high and fed with 20m of coax. The height of the vertical feed-point is 14m (48ft), but this height advantage is probably partially cancelled by the long feeder.

The DX performance of this vertical seemed quite good, having a slight advantage on long DX paths, although the noise level on the vertical was slightly higher.

CONCLUSION

If you are mounting a vertical on a large existing metal structure, it should work well. Originally, I was of the impression that the mast itself would be sufficient but, in my case, this proved not to be true. The length (height) of the mast might be critical, but I was unable to test this.

If you mount an HF vertical above an existing small antenna, such as a VHF / UHF beam, the addition of a counterpoise seems to do the trick, and has the advantage that it can be used to adjust the antenna's resonant frequency. ♦

Fig 1: Top of the LF antenna mast, showing method of fixing HF vertical. The counterpoise is connected directly to the support plate.

Fig 2: The 14MHz vertical fixed to the top of the LF antenna mast. The counterpoise can just be seen sloping away from the mast to the left.

REFERENCES

- [1] *Backyard Antennas*, RSGB Sales
- [2] *The Amateur Radio Mobile Handbook*, RSGB Sales

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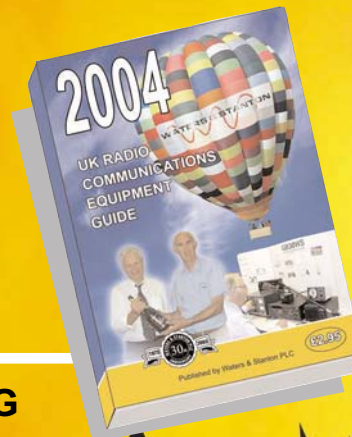
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QRP

'Software radio' is on everyone's lips at the moment. Here we learn about one amateur's approach to the subject. Details of a valve transmitter are included for those hankering after the thermionic days.

In June of this year, I attended the HamCom Convention in Arlington, Texas, and took part in the QRP forums. It was exactly 20 years ago that I attended my first QRP forum in Texas. In addition to the QRP forum, it was interesting to see many products and ideas I had not seen before. It is always good to see radio amateurs developing ideas for their own interest and then turning them into commercial products. I would like to share two such products with you - one 'Hi-Tech' and one 'Retro-Tech'.

THE SDR-1000 SOFTWARE-DEFINED RADIO

In 2002, Gerald Youngblood, AC5OG, published a four-part series of articles on digital signal processing and software-defined radios in *QEX* magazine. The *QEX* series discussed the key elements that went into the design of the SDR-1000 transceiver, which AC5OG now offers through his company, FlexRadio. The SDR-1000 is a complete software-defined radio transceiver interface to a PC sound card. It provides everything needed to convert a personal computer into a high performance, 0 - 65MHz general coverage receiver with 160m - 6m amateur band transmit capability - see the box.

The SDR-1000 incorporates a novel Quadrature Sampling Detector to provide high dynamic range with minimum components. An Analog Devices AD9854 quadrature DDS and 200MHz 1ps jitter clock oscillator provide continuous coverage with very low phase noise. A power RF op-amp delivers up to 1W RMS into a 50K load. All radio control functions are provided through the PC parallel port, including external control for up to seven transverters.

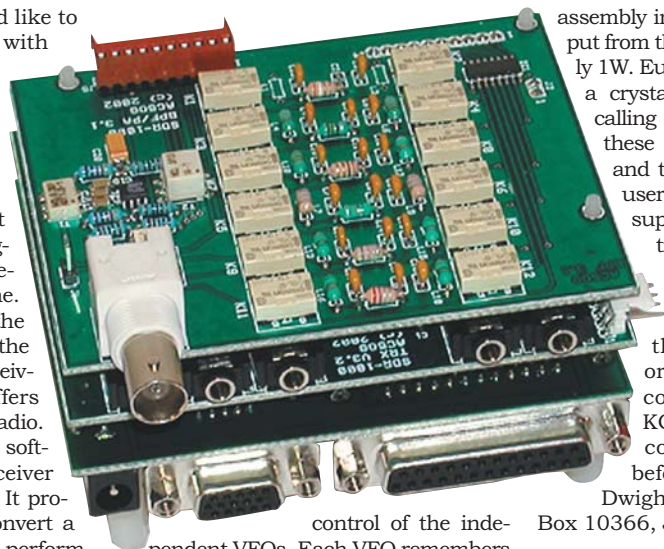
The 'SDR-Console', a full-featured open-software interface in Visual Basic 6.0, supports the SDR-1000. The software is easy to learn, modify and test. Source code is available with the product to encourage amateur SDR research and experimentation. The capabilities of the SDR-Console are limited only by the user's imagination.

The SDR-Console features a real-time spectrum display with a maximum bandwidth equal to the sampling rate of the PC sound card. Both CW and SSB signals may be tuned visually by clicking on the desired signal with the mouse. The frequency axis automatically resizes for maxi-

mum resolution for a given bandpass filter selection.

Dual VFOs are provided with tuning resolution to 1Hz. VFO-A may be tuned with the mouse wheel, the numeric keypad, or by clicking the signal on the spectrum display. VFO-B may be tuned with the mouse wheel and the keypad. Each VFO displays the Band Plan from a user-programmable database.

Pushbuttons allow full



control of the independent VFOs. Each VFO remembers its last mode and bandpass filter setting. The SDR-Console comes with 10 standard bandwidth settings from 25Hz to 4kHz. Independent SSB and CW continuously-variable bandpass filters allow low- and high-cut settings in 1Hz increments. Virtually unlimited memory storage is provided with a simple user interface.

The Transceiver Board, PIO Board and BPF/PA Board (all boards assembled), plus the SDR-Console Source Code (VB6) cost a total of \$499. More information can be had from Gerald Youngblood, AC5OG, FlexRadio Systems, 8900 Marybank Drive, Austin, TX 78750, USA. E-mail: sales@flex-radio.com

THE GlowBug 40 - A 40m QRP VALVE TRANSMITTER KIT

Dwight Morrison, KG4HSY, is an enterprising young radio amateur who has produced a single-valve QRP transmitter kit in response to the apparent increase in interest in valve equipment. A common problem for valve equipment is a suitable power supply but Dwight's kit runs from a 12VAC supply. The board contains an 110V to 12V centre-tapped transformer [used back-to-front - Ed.]. The 12VAC supply feeds this transformer, with the centre-tap on the 12V winding used to produce 6V for the

valve heater and the 110V output is rectified to provide the valve HT voltage.

The Glowbug kit includes a commercial silk-screened circuit board and all the components that mount on the board including a 6AQ5/6005 valve and a 7.040MHz crystal. The kit comes complete with a 12V wall transformer (110V input) and assembly instructions. The power output from the Glowbug is approximately 1W. European users would require a crystal on 7.030MHz (the QRP calling frequency for Europe), but these are available from G3TUX and the G QRP Club. European users would also need a 12VAC supply to replace the 110V wall transformer.

The price of the kit is \$49.85 plus \$8.70 for insured shipping within the continental US. If ordering from outside the continental US, e-mail KG4HSY (chdwimorri@aol.com) for shipping costs before ordering. Details from Dwight Morrison, KG4HSY, PO Box 10366, Jackson, TN 38308, USA.

THE G QRP CLUB MINI-CONVENTION, 2003

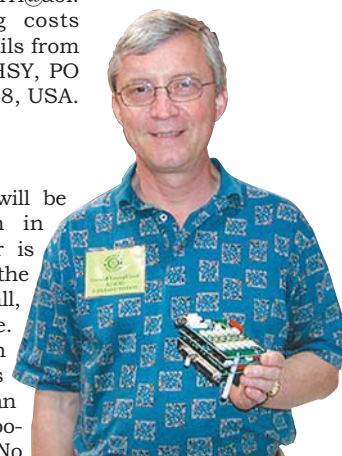
As usual, the G QRP Club will be holding its Mini-Convention in Rochdale. The date this year is Saturday, 11 October, and the venue is St Aidan's Church Hall, Manchester Road, Rochdale. The event begins at 10am with an admission charge of £1. As in previous years, the event is an 'old style' radio rally with component, junk and kit vendors. No expensive new equipment will be on sale and there will be a notable absence of computer equipment. The convention will also include a full programme of lectures throughout the day plus the traditional pie and peas lunch. Details can be had by sending me a stamped addressed envelope to the address above or by sending an e-mail request. ♦



Front view of the Glowbug.

Left: The SDR-1000 Software-Defined Radio.

Gerald Youngblood, AC5OG, with the SDR-1000.



WEB SEARCH

AC5OG
KG4HSY

www.flex-radio.com/
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BASIC SPECIFICATIONS OF THE SDR-1000 TRANSCEIVER

| | |
|----------------------------|-------------------------------------|
| Frequency range | 0 - 65MHz |
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| DDS clock | 200MHz, <1ps RMS jitter |
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| Max. receive bandwidth | 40kHz (limited by sound card) |
| Transmit power | 1W RMS |
| Control interface | PC parallel port (DB-25 connector) |
| Rear panel control outputs | 7 open Darlington collectors |
| Input controls | PIT, code key, mic |
| Sound card interface | Line in, line out, spkr out, mic in |
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LAST DAYS OF 73kHz

There was a 'QSO party' on 73kHz over the last weekend in June, featuring many of the 73kHz regulars. It was pleasant to be able to use the band without interference from Rugby Radio (see below). The event finished on Monday 30 June at midnight GMT with the completion of a QSO between G3LDO and G3XDV who have both been active on the band since its introduction in 1996.

NO 136kHz FOR THE USA

Since the last column went to press, we have learned that the FCC has decided not to allocate 136kHz to US amateurs because of worries about interference to and from power-line signalling systems. It seems strange that they should cite worries about power-line signalling systems causing interference to amateurs as a reason for not allocating the band!

The FCC suggested that amateurs wishing to experiment with LF could still apply for Part 5 experimental licences, or operate under existing Part 15 rules, as do current US LowFERS.

The Canadian authorities have yet to decide their response, but are still issuing experimental permits to amateurs. Assuming that they go ahead and open the band for general use, it may encourage the Americans to think again.

On a more positive note, despite the summer doldrums, the first two-way QSO took place between Newfoundland and the UK in early June when M0BMU worked VO1NA on QRSS. Joe's signal has since regularly been seen in Britain and Germany.

At least there is hope for some more trans-Atlantic QSOs to VE and VO.

LF OPS MEET AT FRIEDRICHSHAFEN

There was an LF get-together at the Friedrichshafen Hamfest this year, where DF6NM gave an interesting presentation on his 136kHz direction-finder. An international LF contingent included G3WKL, who evidently provided the beer, OM2TW, G3YSX, G3GRO and many German LF operators.

SAQ ON THE AIR AGAIN

The vintage Alexanderson alternator at Grimeton, Sweden, was spun up again

at the end of June. The signal on 17.2kHz, with its distinctive flute-like note was widely received. The best report I heard about was from John Andrews, W1TAG, in Massachusetts, who copied three transmissions from SAQ, most in broad daylight.

LF LISTENING IN GHANA

In June, Laurence, KL1X (aka G4DMA), travelled to Accra, Ghana where he set up the first 136kHz receiving station in Africa. He took his trusty TS-870 and laptop and was able to leave *Argo* running during the hours of darkness whilst many European stations transmitted QRSS.

June is obviously not the best time of year to listen for DX on LF – high humidity, storms, short nights and lots of static – but he did detect some fragments of signal from G3LDO and possibly other stations.

Laurence noted that daytime D-layer reflections started at around 0800UTC and produced quite stable and low levels of signal from DCF on 138.8kHz with a fast rise to maximum strength within 15 minutes of becoming visible on *Argo*. Signals were then subject to slow fading throughout the day with a gradual loss of signals between 1430 and 1600.

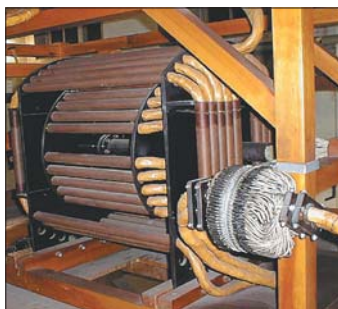
Night-time mode started at around 1930, again rising very quickly, then exhibiting deep QSB with strong peaks from 2200 to 0200. The night-time mode died suddenly at about 0410.

Unfortunately, his local callsign didn't come through in time, so no HF communication was possible. Laurence hopes that, on his next visit, with a little more notice, he may be able to transmit on 136kHz too.

FIRST POLISH LF QSO

A CW QSO took place between the club station (operator SQ2HNA) and SQ2BXI/P in June. The distance was less than 1km and the stations worked with only 10W and 0.1W respectively.

The club members at SP2PZH are building a new antenna, a 100W PA and an LF/HF converter. They will then be able to work



Top left: One of the variometers in the GBR tuning system, a litz wire joint can be seen in front.

Top right: The 73.5kHz Rugby transmitter. The source of all that noise on the 73kHz band!

Bottom: Laurence, KL1X (G4DMA), with one of his receiving loops.

more distant stations. Polish hams have had permission to use the 136kHz band since April.

NEW LF WEBSITES

Steve, VE7SL, has recently added a '136kHz Activity' page to his website. He hopes it will help to encourage LF activity in Canada.

Ed, RU6LA, is putting together a 137kHz news and information site in Russian with some English. It's still in the early stages of development but more is being added all the time.

RUGBY VISIT

I was lucky to be invited on a tour around the Rugby radio station which was, until recently, the source of the UK's main VLF transmission, GBR, on 16kHz. The great aerial is now bereft of RF. The only transmission still coming from Rugby is the 60kHz time signal.

The station has been transmitting since 1926 and was using SSB for trans-Atlantic telephony as early as 1927. These transmissions took place around 60 to 70kHz.

It was fascinating to see the giant litz wire loading coils and variometers for the VLF system. The coils are all wound on hardwood frames and the litz wire joints are something to behold (see the photograph). As these had to pass nearly 800A of aerial current they had to be good!

It is sad to think that soon most of the 820ft masts will be coming down, as well as about 200 smaller ones, to make way for 'development'. Surely the main

building should remain as a heritage site? After all, if Grimeton can do it, why can't we? ♦

WEBSEARCH

Canadian LF site

www.imagenisp.ca/jsm/136.html

Russian LF site

<http://136.73.ru/>

A history of Rugby Radio

www.alan.melia.btinternet.co.uk/rugbyrs.htm



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On the 31st of July, Reg Woolley, G8VHI, worked EB8AYA on 70cm at a distance of 2966 kilometres for a new IARU record. And on 2 metres he worked RN6BN, a double-hop Sporadic E contact of 3032 kilometres. His new record was made using a TS-2000 transceiver with 100 watt PA to two 23-element Yagis 13 metres above ground.

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By Simon Lewis, GM4PLM, Creoch Farm, Ochiltree, Ayrshire KA18 2QH. E-mail: uwave.radcom@rsgb.org.uk

One of the regular questions asked about microwaves is “Why bother? There is never anyone on those bands”. Fortunately, nothing could be further from the truth, and there is a core of regular activity in the UK and in nearby Europe. The author explains.

Micro

While some amateurs decry the Internet for taking amateurs away from their radios, it is actually getting people onto microwaves and making QSOs.

Using a few Internet chat areas, amateurs are now able to chat in real-time and organise and arrange contacts without struggling on lower VHF bands for talkback. With today's modern microwave stations, their performance has outgrown the capability of that of the average 144MHz station. Indeed, many contacts are made on the microwave bands without resorting to talkback on a lower frequency and, in Europe, the use of VHF talkback has almost ceased.

Using the Internet chat areas, amateurs can arrange contacts with others instantly and, with the increase in high-power home-based microwave stations, this is assisting the activity even further. A regular core of microwavers is now active, as is the case on any other amateur band and at any time. The days of having to go out portable to work are well and truly over.

There are still plenty of people who enjoy their time out on the hills, however and, to encourage activity, there is a good selection of cumulative contests and activity days for the non-contester throughout the year. These provide good opportunities to test new equipment and to get out and enjoy the good summer sunshine that we have had this year.

EXPEDITION TO GERMANY

I recently had the opportunity to visit the Düsseldorf area on business and took the opportunity to extend my visit for a couple of days to meet some amateur friends in that area. My host, Stefan, DG9BDI, was very kind in chauffeuring me from the city to his home near Osnabrück, an interesting journey allowing me to explore a little more of this lovely area. Stefan also arranged for two of his local amateurs who are interested in microwaves to come to a barbecue, and I was surprised to meet Klaus, DL3YEE (who is a well-known and regular callsign in the UK), his wife Sabine, DH4YAW, and Maathias, DF9QX. Plenty of alt bier and barbe-

cued food was consumed while talking microwaves and VHF, but I was also told that the next day I had a shack visit arranged to the homes of Klaus and Maathias.

On the Saturday morning we travelled the short distance to DL3YEE and I spotted the tower and antennas a long time before we arrived. Things are very different in Europe on microwaves, and they build good home stations rather than go out portable. Klaus's well-built station was an excellent example of a that of a European microwaver, and he demonstrated his work by showing me the GB3MHL beacon on 1296MHz at over 500km on a flat band! There had been some big thundershowers the day before, but no rainscatter was heard that morning. After a quick tour of his station, we travelled 10 minutes down the road to Maathias's home and I was given a tour of his fantastic machine workshop and shack; his machine facilities were superb and he takes a lot of pride in his construction. Maathias is very active on EME and I was given a guided tour of his 5m home constructed dish for 23/13cm EME. Unfortunately the time ended all too quickly and it was time to catch the plane back to the UK, but it was an excellent insight into the way Europeans do their microwaves. Thanks to Stefan and Heike (my hosts) and to Klaus, Sabine and Maathias for their hospitality.

RSGB MICROWAVE COMMITTEE LOW-BAND CONTEST RESULTS

This contest, held on 30 March, aimed to encourage home-station

OVERALL RESULTS TABLE

| | 1.3GHz | 2.3GHz | 3.4GHz | Total |
|-----------|--------|--------|--------|-------|
| G3XDY | 1000 | 1000 | 1000 | 3000 |
| G4BRK | 507 | 400 | 281 | 1188 |
| G3PHO/P | 296 | 0 | 580 | 876 |
| G4WYJ/P | 381 | 297 | 0 | 678 |
| G8ACE/P | 173 | 206 | 241 | 620 |
| G3UKV/P | 143 | 0 | 382 | 525 |
| GOUPU | 40 | 12 | 78 | 130 |
| G4S, JH/P | 0 | 52 | 0 | 52 |

Table 1: Overall results of the RSGB Microwave Committee Low-Band Contest.



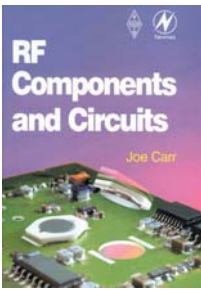
The antennas at DL4YEE.

wave

operation on the three lowest bands in the amateur microwave allocation, 1296MHz, 2.3GHz and 3.4GHz, though portable entries were equally welcome. There were several entries (see **Table 1**). Activity levels were quite good on all bands in the UK - it is a pity more stations did not send in an entry. John, G3XDY, was the leader on all three bands, and also the overall winner. John reports good conditions into Germany from his East Coast (JO02) location at the start of the contest, which helped considerably - a number of German stations were worked on all three bands. John was running 250W to 4 x 23-element Yagis on 23cm, 50W to a 0.6m dish on 13cm, and 15W to a 0.6m dish on 9cm. Runner-up was Neil, G4BRK, also operating from home, followed by Peter, G3PHO/P, operating from Houndkirk Moor. In contrast to the east coast, both Neil and Peter report quite flat conditions from Wiltshire and Yorkshire. There is a similar event scheduled for 30 November - let's hope for good activity again, and this time, please send in your entry!

Details of microwave contests, cumulatives and activity periods and their associated rules can be found on the excellent website of Peter Day, G3PHO, at www.g3pho.org.uk ♦

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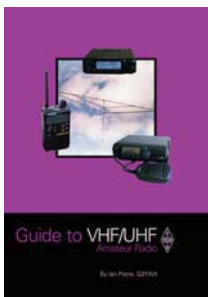
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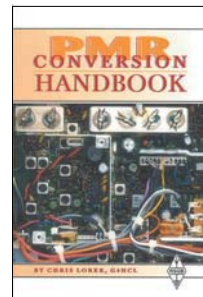
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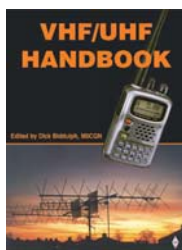
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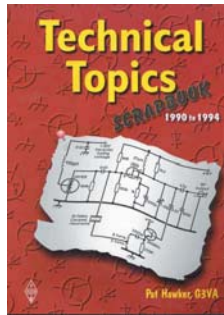


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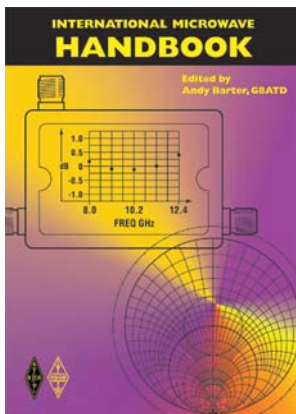
A collection of all of the very popular Technical Topics articles by Pat Hawker, G3VA, by far the most successful regular column in the RSGB's journal RadCom, and a blend of clippings from other publications and contributed material. Pat has produced a wealth of ideas, modifications, and tips for the radio amateur for many years, and these books contain a sample of his contribution to amateur radio in the most popular RadCom column of all time. These books could well provide that vital 'spark' for your next project!

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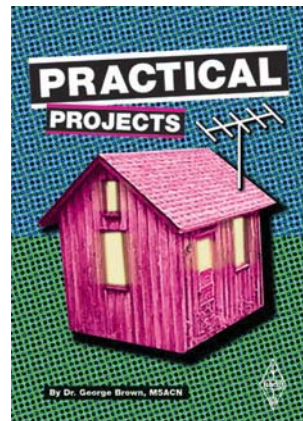
International Microwave Handbook

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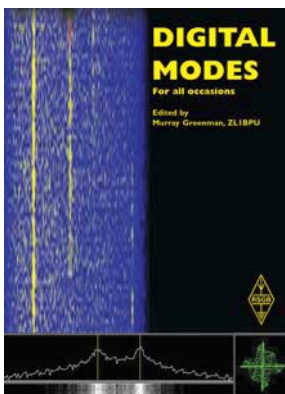
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BATC at a previous Bletchley Park meeting. Its thanks go to ITN and BT for the uplinks, and to Three Rivers for the terrestrial links.

Let me start by thanking everyone for the e-mails and telephone calls, some from very exotic locations, all but one on the same subject – “When is this year’s BATC BGM being held?” Well, the short answer is that BGM’s are held every two years and this is not a BGM year. I don’t think any of us realised how popular these events have become. In the past we have had an ATV event on non-BGM years. Of late, these have been held at Bletchley Park, the site famous for its WWII code-breaking operations. The park had its closed days and we used to hire its facilities on one of these days. Since the book *Enigma* and a subsequent film of the same name, Bletchley has sprung to fame and is open every weekend. With the loss of these closed days we are having to rethink our ATV get-togethers.

BATC OPEN DAY

This year we have been invited to the Telford Amateur Radio rally (31 August) so, if you get your skates on, there is just time to get along there and see us; admission and parking are free and everyone is welcome. I look forward to meeting you there.

ATTRACTIONS

What will be happening? DATV is bound to raise its head, and if the AGAF-sponsored kit from Wuppertal University arrives in time, you will be able to evaluate it for yourself and decide if this is the way forward for ATV. There will be other attrac-



tions, including a chance to get your hands on a working broadcast-TV camera.

30-LINE TV

Those of you who are regular viewers to *Tomorrow’s World* will be aware that we were treated to an item of television history when a Baird 30-line ‘Televisor’ was shown. The pictures came from a domestic camcorder, were standards-converted and then viewed on a mechanical-scan Televisor. The results are interesting and should remind us of the roots of television technology. It was a pity that the pictures were not from the original Baird camera. It still exists today and can be seen at the National Museum of Photography, Film and Television in Bradford. The icing on the cake was an interview with Doug Pitt from the Narrow Bandwidth Television Association. The NBTV works very hard on promoting this system of Television and it’s fantastic to see it get some recognition.

FOUND IN THE POSTBAG

The latest copy of the German ATV magazine *TV Amateur* arrived today and it’s good to see it is still as packed as ever with ATV circuits. The previous issue had the design by Roberto Zech, DG0VE, for a 5.7GHz front-end using a 4.8GHz local

oscillator to down-convert 5.6 to 5.9GHz to within reach of a satellite receiver. The unit is phantom-powered by the satellite receiver and is a direct replacement for the LNB. This latest issue has an excellent article on levelling microwave dishes by DJ9PE and an article for adapting satellite receivers for ATV by DJ7RI. The regular column reviewing other ATV magazines by Klaus Kramer, DL4KCK, is always of interest. This time he has reprinted an article from Brian Kelly, GW6BW, on DATV, published in *CQ-TV 202*. There is also a colour photo spread of their latest meeting. It’s good to see a picture of Heinz Venhause, DC6MR; when ATV was moving to 24cm, we had many debates about FM versus AM, and we both used to burn the midnight oil discussing the merits of each system. I am pleased that FM, with its non-linear PAs and intercarrier sound, won the day and became the standard for ATV repeaters

The final thing to hit my doormat this week was a third-generation electronic character generator from the Black Box Camera Company. For those of you not familiar with these products, BBCC sponsors the *CQ-TV* letters column and presents one of these generators to the best letter in each issue. The latest version of this unit is driven by a PC keyboard and allows captions to be superimposed on a video signal. It’s a very impressive piece of technology and could be yours just by writing to the *CQ-TV* letters column. ♦

ATV

WEB SEARCH



Black Box Camera Company
Telford Rally
Open Day information
AGAF
NBTV

www.stv5730a.co.uk
www.telfordrally.org.uk
www.batc.org.uk
www.darc.de/distrikte/g/t-agaf
www.nbtv.org

Members' Ads

FOR SALE

70cm complete station: FT-790R multimode tcvr, boxed with man; Microwave Modules 30W amp; Watson W-420 VSWR/power meter; patch leads; 20m feeder; 19-ele Yagi. Present QTH very poor for UHF, buyer collects or pays carriage, £300 ono. Clive, GM4VVX, QTHR, 01549 402 835 (Lairg). E-mail: cohennesy@madasafish.com

B2 Type 3 MkII vgc. CBY 46106 aircraft rcvr. NZ ZC1 MkII tcvr. BC221 frequent meter - Zenith. Leader LSG 16 sig gen. Vintage 394A rcvr. KW Viceroy & PSU, Offers, please? Ken, G4VKK, 01482 844 662, or Les, G4LNR, 01482 655 501 (Hull).

FREE caravan, Avondale Sandpiper, 17ft long, single axle, elderly, but fully roadworthy, well equipped, cooker, heater, toilet. Newly upholstered, ideal for contest group. Surplus to my needs, so free to a good home. New owner to tow away. Ray, G3HRH, 01962 712 045 (Winchester). E-mail: g3hrh@btinternet.com

IC-775DSP tcvr, £1100. Heil Sound Proset-5 (headphones still boxed), £100. IC-728 tcvr AM-FM unit fitted, £300. All items exc cond, non-smoking operator, buyer must collect. Kenwood TR-751E 144MHz all-mode tcvr, £275. No time wasters, please. 01592 757 831.

ICOM 706 MkII with DSP HF - 6m & 2m, original box & man, can be seen working, £375. 01903 772 563 (Littlehampton). E-mail: dennis@ellis3147.fsnet.co.uk

INDEX Labs QRP Plus low-power SSB/CW tcvr. All-band operation 160m to 10m. Gen cov rcvr 1.8MHz to 29.7MHz, 20 memories. High performance Scaf filters, variable from 100Hz to 2400Hz. Built-in iambic keyer, £225. GW3YKZ, QTHR, 01633 775 879 (Newport). E-mail: mike@biddiscombe.org.uk

KENWOOD TS-130S tcvr with WARC bands & gen cov rcvr, mic, 100W PEP, £325. Kenwood PS-30 PSU, £30. Kenwood MC-85 desktop mic, £25. Kenwood TS-950D tcvr, 150W, full mans, vgc, £850. Kenwood SP-940 spkr with filters, £75. Kenwood SM-220, scope, station monitor, man, £150. Huge list of ham, test, video, audio, antenna, tools & photographic equipment for sale. Please contact for latest list. E-mail: g3aag@aol.com

KENWOOD TS-830S HF 100W transceiver, matching ATU-230, SP spkr, MC50 mic, 100W dummy load & many extras, £400. Kenwood TS-850SAT 100W with internal ATU, PSU, matching spkr & mic, all Kenwood, boxed & in mint cond,

RSGB Members wishing to place an advertisement in this section should use the official form printed in **RadCom** each month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged **pro rata**. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into. Licensed members are asked to use their call signs and QTHR, provided their addresses in the current edition of the RSGB Yearbook are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition. Please do not send members' advertisements to Manning Publishing Ltd (advertising agents). **The closing date for copy is the first day of the month prior to publication, eg the deadline for the May issue is 1 April.**

Warning: Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads

many extras, £900. G4ZQL, 07748 568 744 (Rochdale). E-mail: n.higgins4@ntlworld.com

MARCONI sig gen TF-2016A with synchroniser TF-2173. 10kHz/120MHz AM/FM. 10in x 10in footprint, mint cond, £275. Early (1939) Wheatstone Bridge. (Laboratory Instrument, Pye Scientific), £95. Eddystone 770R AM/FM/CW rcvr 19/165MHz, £120. Rascal 100kHz crystal filter in sealed manufacturer's package, £30. Admiralty 5in Aldis signalling lamp, £60. Four 811A valves, offers? Megger earth loop tester, leather cased, mint cond, £60. Ron, G3ZSJ, QTHR, 01293 885 701 (Crawley).

RADCOM 1993 - 2000, free if you can collect, all clean cond, 0121 449 5583 (Birmingham). E-mail: c.k.sketcher@bham.ac.uk

RECEIVER, Yaesu FRG-7700 / FRV-7700 / FRT-7700 ATU, 0 - 30MHz & 140 - 170MHz, all mode, mint cond, £200. G1XYM, QTHR, 07971 846 776 (Nottingham).

SELLING-up. Icom 706 MkII DSP, desk mic, hand mic, mobile kit; Yaesu FP-757HD PSU/spkr; MFJ-949E ATU, Comet CF-30S low-pass filter, GAP Challenger, 80 - 2m incl WARC vertical antenna; HK-808 twin-paddle key; various other items, prefer sell complete, £750. Or serious offers for items, buyer collects or carriage at cost. G0SLG, QTHR, 01458 250 124 (Langport). E-mail: g0slg@yahoo.co.uk

SILENT key sale - GW3IEQ: HyGain AV-620, 6-band vertical aerial, mint, in manufacturer's 6ft carton, £200, ono. Many shack clearance boxes £5 - £30 each, offered as seen. 100m 50-ohm cable, interconnects with BNC terminations. Rigger's hardware, various meters.

Tuning capacitors, capacitors, resistors, baluns, filters & traps. Tools & instruments, reference books, viewing welcomed. 01286 831 340 (Caernarfon).

SILENT key sale (the late G3OXC). A number of books on radio including some collectors' items, eg: *Admiralty Handbook of Wireless Telegraphy*, both the 1931 & 1938 editions; *Modern Wireless*, by Scott-Taggart, dated 1923; *The Marconigraph*, Vol II, 1912 - 1913 (the predecessor of *Wireless World*); list too long to publish. Also FT-980 HF transceiver in exc cond with h/book & mic, £260. Dick, MOCGN, 020 8399 8787 (Surrey). E-mail: Biddulph@intonet.co.uk

SILENT key sale, G0FYW. Kenwood TS-530SP inc MC-35 mic, YK-88SN filter, £250 ono. Watson WMM-1 multimode modem inc software discs, £25. Both exc cond, plus carriage, G3OHC, QTHR, 01757 290 078 (Selby). E-mail: gbadger@boltblue.com

SILENT key sale. Yaesu FT-5200 mobile VHF/UHF tcvr, £140. G8RYW, 01628 628 463 (Maidenhead). E-mail: g8ryw@tesco.net

SILENT key. Icom 207H, £185. Yaesu FT-920, £825. Kenwood TM-V7E, £225. MFJ-1278B, £230. All vgc, boxed with h/books. Alinco DJ-195, £110. Yaesu FC-902, £110. Pac-Comm TNC-220, £60. Buyer collects or pays carriage, close offers considered. Ray, G3HRH QTHR, 01962 712 045 (Winchester). E-mail: g3hrh@btinternet.com

SILENT key: Create RC5-3 rotator, £175. Cushcraft 10 10-ele crossed Yagi, £100. Cushcraft A3 3-ele tri-band Yagi, £200. Tonna 20505 5-ele 6m Yagi, £40. Tennamast standard 10.7m mast, £175. VHF dish 80cm,

£25. Icom 756PRO inc man & box, £1225. Icom 820H VHF/UHF inc man, £750. MFJ-1278B multimode data controller, inc man, £200. Kent KTPA twin-paddle key, £40. Peter, G3HEE, 01780 755 001 (Stamford). E-mail: p.fancourt@btinternet.com

TEN-TEC Argosy MkII tcvr, digital r/out 5/50W i/p with PSU, mic, h/book, £175, working order. Yaesu FT-7 tcvr QRP rig 20W i/p 80, 40, 20, 10m bands with PSU, mic h/book, £150, working order. Prefer collection, but will discuss delivery. Bob, G3JJV, 01252 615 831 any time, or Mike, 01252 403 655, daytime (Fleet).

TEST gear, giving up homebrew, Trio (Kenwood) Dip Meter DM-801, 0.7 - 250MHz, £40. MFJ Antenna Analyser MFJ-259B, £100. Bird 43 Wattmeter (8 plug-ins), HF to 1000MHz, £350. Rascal VSWR Bridge type MA-149A (resistive), £40. G4BNB, QTHR, 020 8504 3260 (London).

TRIO TS-940S AATU etc, £550. IC-706IIG vgc, FL-223 sep lead, £600. IC-2800H wide rcvr, £300. IC-PCR100, £150. Eddystone 680X 'dirty', offers? B28 rcvr (for spares), offers? Hamilton CIH-46159A rcvr(for spares), offers? Tonna 9-ele 2m beam, £40. G1PVA, QTHR, 01227 772 556 (Whitstable). E-mail: g1pav@madasafish.com

VINTAGE amateur & military radios, all working: Collins 32v-3, TCS-12, ART-13, Bendix TA-12B, Johnson Viking Valiant 2, KW Vanguard, LG-300, WS-19 MkII with RF amp 2 MkIII, WS-19 MkII with control (US version), WS-22 MkII, WS-17 MkII, ZC1 MkII & remote, T1154H & R1155B, DX-100, DX-40, WS-52, HR0-MX, AR88D, Hallicrafter SX-24, Hammarlund SP-600JX, Rascal R17L, Eddystone 770R MkII, R209 MkII, CR100/2, MFJ-986 tuner, PSUs valves, HV paper caps, transformers. Offers? Buyer collects. Tom, GW3LJS, 01792 363 442 (Swansea).

YAESU FC-902 500W ATU, £65. AEA 300W ATU, £35. Both fitted Vernier dials. Yaesu FL-2100B plus two brand new valves,

CONGRATULATIONS to the following, whom our records show as having reached 50 years' continuous RSGB membership this month

| | |
|-----------------|---------------|
| 50 Years | |
| G3IMV | Mr J Hunter |
| G3IZQ | Mr H Hyman |
| G3KDA | Mr M G Rimmer |

SILENT KEYS

We regret to record the passing of the following radio amateurs:

| | | |
|----------|-------------------|----------|
| 4S7NR | Mr N Y Ranmuthu | 07/03 |
| G0CEK | Mr F W Webb | 17/07/03 |
| G0GXJ | Mr R R Bradshaw | 09/05/03 |
| G0KXH | Mr K D E Clayden | 04/06/03 |
| G0NZF | Mr L F Andrews | 16/06/03 |
| G0VMI | Mr B J Osborne | 22/05/03 |
| G2ALN | Mr E W Taylor | 13/01/03 |
| G3JQV | Mr R D Sexton | 18/07/03 |
| G3PCA | Mr J Hooper | 19/06/03 |
| G3PFS | Mr D King | 26/07/03 |
| G4GMG | Mr J Holmes | 03/05/03 |
| G4GZZ | Mr A D Banks | 15/07/03 |
| G4PUK | Mr W F Dunbar | 06/03 |
| G6FS | Mr D M Ferguson | 16/06/03 |
| G6LJ | Mr S K Lewer | 26/06/03 |
| G7AWC | Mr B Park | 27/05/03 |
| G7IQU | Mrs L R Andrews | 15/08/02 |
| G8VH | Mr F M Trier | 07/03 |
| GM0KXF | Mr I Hughes | 07/03 |
| GM0MFE | Mr J Nicholson | 06/07/03 |
| GM0PHM | Mr A J McCafferty | 15/12/02 |
| GM4YMA | Mr T Dunlop | 15/06/03 |
| OZ1BCI | Mr N Holm | 06/03 |
| PA0NU | Mr A N Nolke | 25/07/03 |
| RS173492 | Mr D P Usher | 26/04/03 |

£350. MFJ DSP filter, £40. Twin meter 25A power supply, £50. Icom IC-706 boxed, mint, £375. All gwo, Des, G0JCF, 01895 633 118 (Ruisslip). E-mail: rontor@clara.co.uk

YAESU 817 mint cond, boxed plus Toyo Hy-power HF 50MHz power amplifier, £600. 0151 522 0252 (Moreton, Cheshire).

YAESU FRG-8800 rcvr with VHF conv fitted & FRT-7700 ATU, £200. Kenwood TS-140S tcvr/gen cov rcvr including crystal filter, £300. Power supply, 25A 14V, type DPS-2521M, £50. All in vgc. Neil, G0LNV, 07850 119 453 (Sheffield). E-mail: nealtapple@onetel.com

YAESU FT-1000MP MkV, mint cond with man & boxed, non smoker, £1650. 01303 863 891 (Folkestone).

YAESU FT-736R tcvr, man, box, £450. Daiwa CNW-727, 2m + 70cm ATU, £20. Icom SP-21 speaker, £25. AKD HF-3E rcvr, £50. MFJ-1262 mic sw 8-pin round, £25. Hameg Scope 60m DB HM-604, £120. Hi-Mound key HK-804, £30. Vibroplex Vibrokeyer Deluxe, £100. Diamond V-2000 6+2 70cm vertical, £20. TSB-3302 GP 2+70cm vertical, £15. Trio/Kenwood TL-922, recent service by Linear Amp UK, £800. International Radio mod for Yaesu 1000MP, £20. G2DYM traps, used, 40m, £8. Oscar traps, new, 40m, £10. Sigma traps, new, 40m, £10. Diamond BU50 Balun 50/50, £10. BL40X Balun 50/50, £5. Carolina Windom 20-20/15/10

aerial, £20. Selection of mast-ing, G3XNP. 01992 632 434 (Cheshunt).

YAESU FT-757GX, good wkg, £275. MFJ noise & interference canceller, new, £170, nearly new, £100. 01494 441 037 (High Wycombe). E-mail: larryd@dodsonllll.fsnet.co.uk

YAESU FT-77 HF tcvr, good cond, gwo, 3.5 to 29.5MHz, no man. See spec on www.rigpix.com/yaesu/ft-77.htm Best offer over £199 secures, postage extra, Steve, 01829 733 207, E-mail: steve@interleaf-pc.co.uk

YAESU FT-817, Nicad pack charger, power lead, carry case, PSU, Miracle Whip & man, £375. John, G0OID, 01249 890 674 (Chippenham). E-mail: johng0oid@aol.com

YAMAHA DSP - E580 Hi-Fi amp, £50. Sherwood RX-1010 tuner/amp, £25. Sherwood A1 - 1210R Hi-Fi amp, £40. Several VCRs various makes, £15 each. All working OK. Sell or swap any of these to buy HF rig. Ted, G8HLJ, 0151 632 0614 (Hoylake).

ZX Interface, £5. Kempston interface joystick, £5. Spectrum interface, £5. Printer, £5. DK-tronics interface, £5. Thermal printer paper, £5. ZX Microdrive, £5. Acorn Electron computer, £5. Spectrum computer, £5. Compaq Portable III, £5. Presario CDs 520, £5. 2 small scopes, £10 each. PSUs, £2. G0IPT (London). E-mail: dennis@whsmithnet.co.uk

WANTED

ALINCO DJ-X1 wide-band rcvr with soft case, must be in excellent cond. Dave, G8XZA, 01234 713 646 (Bucks).

ALINCO DX-70TH; Rascal TA-944 amplifier; modern quality HF sig gen. Exchange/sell Yaesu FT-7B, Ten-Tec Argosy 525. John, G3GTJ, 01963 240 319.

ALL Rascal or Watkins-Johnson items wanted by enthusiast & collector in any cond. Receivers, accessories, spares or mans. WHY? Especially looking for a RA-17 LF converter & SSB adaptor, RA-1772, RA-1218. Also R-1155 & tall 19-inch equipment racks, and a JRC NRD-535. Can arrange collection from anywhere. G8WKA, QTHR, 01252 795 234 (Surrey). E-mail: richardreich@aol.com

AR88 man, original or photocopy. Fax 003 572 278 1576, will cover all costs, Tony, 5B4AS, 003 572 277 9176.

COLLECTOR of certain old Pye items, seeks good 1950s PTC mobiles (Ranger Reporter. etc), also Continental (derived from Cambridge). PF6 pocket-fone & PF6 h/book. PT-506 marker oscillator 23-455MHz. Operating instruction cards (as supplied with Pye sets when new) for most equipment. Pye publicity material & pamphlets, etc. Genuine private enthusiast. WHY? John, 07762 384 580, (Colchester). E-mail: johnbryancook@hotmail.com

DISABLED fan of old days seeks pre-1970 QSL cards/magazines,

etc. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk. IP18 6PQ.

G2DAF-type transmitter (preferably MkII), wkg cond unimportant if otherwise complete, G14LQU, 028 9028 8164, (Belfast).

MORSE keys wanted please, especially interested in early brass telegraph keys from GPO, Marconi, Navy, RAF etc. John, GORDO, 01626 206 090. (Devon). E-mail: gOrdo@morse-mad.com

TS-850, any model wanted, preferably with CW filter & any extras. Contact Danny, M0GMT, 01903 209 316 (Worthing). E-mail: m0gmt@postmaster.co.uk

WANTED: two plate connectors for 4CX250 valves, or information on where they can be obtained. G3GBB, 01379 783 657 (Diss).

RALLIES & EVENTS

31 AUGUST 2003

ANDOVER RAC Middle Wallop Boot Sale - Museum of Army Aviation, A343 south of Andover. OT 09.30 / 10am, £1. C, picnic area, TI on 145.550MHz, CP, TS, FAM. Terry, G8ALR, 01980 629 346 or g8alr@ukgateway.net [www.arac.co.uk]

TELFORD ARRQ 2003 Telford Rally - RAF Cosford Aerospace Museum, on A41, one mile south of jn 3, M54. OT 10am. Entrance & CP free. RSGB regional stand / bookstall / EMC Clinic, WIN, BATC AGM, TS, CBS, B&B, Eddie Murphy, G0VVT, with QSL cards for the G6AAA - ZZZ series. Bob, M0RJS, bob@somrob.u-net.com [www.telfordrally.org.uk]

WATERSIDE (New Forest) ARS Radio & Electronics Table-Top Sale - Scout HQ, Applemore College, Dibden Purlieu, nr Hythe, Southampton. OT 10am, CP free, TI on 144.550MHz. Bill, G0XAZ, 023 8078 3170, or simmonb@ntlworld.com

7 SEPTEMBER 2003

SOUTH NORMANTON, ALFRED-TON & DARC Amateur Radio Car Boot Sale, Market Street Community Centre, Village Hall, Market Street, South Normanton, Derbyshire, 5 mins from jn 28 M1. OT 10am. Russell, G0OKD, 01773 783 394, or russel.bradley@ntlworld.com

12 SEPTEMBER 2003

Clandestine Radio Symposium - Bournemouth University Talbot Campus. Development of clandestine radio from WWII to present, by many speakers, some personally responsible for this work. John Teague, 01963 240 319 or Keith Thrower, 0118 947 48113.

14 SEPTEMBER 2003

FENLAND RG Horncastle Summer Amateur Radio Rally - Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle, Lincs (nr Horncastle Police Station). OT 10.30am, £1. C, TI on 144.550MHz. Chris, G0PXB, 01526 860 320 or Tony, G3ZPU, 07778 274 535. [www.fenlandrepeater.org.uk]

SUFFOLK DATA GROUP Five Esses Rally - Raceway Centre Green, Foxhall Stadium, nr Ipswich, Suffolk. Amateur radio, computers, electronics. OT 9.30am, £1. Peter, G8HUE, 01473 631 313. [www.suffolk-datagroup.freemove.co.uk]

19/20 SEPTEMBER 2003

LEICESTER Amateur Radio Show - Donington International Centre, Castle Donington, Leics. Geoff, G4AFJ, 01455 823 344, fax 01455 828 273 or g4afj@argonet.co.uk

19-28 SEPTEMBER 2003

HORNSEA ARC Antenna Workshop & Farm - Usual attractions, inc full-size rhombic, demonstrations from Linear Amp UK. Richard, G4YTV, 01964 562 498 or g4yvt@aol.com

20/21 SEPTEMBER 2003

Transmission 2003 - 11th annual event to raise money for the British Wireless for the Blind Fund.

28 SEPTEMBER 2003

National Vintage Communications Fair - Hall 11, National Exhibition Centre, Birmingham. OT 10.30am, £5, under-14s free. 300 stalls, vintage wireless, valve amplifiers, classic hi-fi, gramophones, records (shellac 78, vinyl and CD), early TV, etc. Terry Martini, 07947 460 161, info@nvfc.org.uk [www.bvws.org.uk]

5 OCTOBER 2003

BELGIUM Amateur Radio & Computer Rally - Hall 'La Louvière Expo', La Louvière, access direct from motorway 50km S of Brussels. OT 9am. TI on FM repeaters: 145.600MHz & 430.325MHz. FM, TS from UK, Holland, Germany & France. Michel, ON7FI, 0032 64 849 596, or dewyngaert@skynet.be [www.qsl.net /on6ll/]

11 OCTOBER 2003

G QRP CLUB Mini-Convention - St Aidan's Church Hall, Manchester Road, Rochdale. OT 10am, £1. 'Old style' radio rally, components, junk and kit vendors. No expensive new equipment will be on sale, notable absence of computer equipment. LEC plus the traditional pie and peas lunch. g3rjv@gqrp.co.uk

12 OCTOBER 2003

GREAT LUMLEY AR & ES Rally - Great Lumley Community Centre, Front Street, Great Lumley, nr Chester le Street. OT 10.30am, £2 (accompanied under-14s free). CP free, C, B&B, radio, hobbies, satellite, component stalls, model aircraft flying display, TI. Nancy, 0191 477 0036 or 07990 760 920 or nancybone2001@yahoo.co.uk

14/15 OCTOBER 2003

LOW-POWER RADIO ASSOCIATION Radio Solutions 2003 - ETSI, Sophia Antipolis, nr Nice. Diane Green, 020 8658 3511, diane@instrotec.demon.co.uk

19 OCTOBER 2003

BLACKWOOD & DARS Rally - Newport Centre, Newport, 1 mile from jn 25A of the M4, (jn 26 travelling west to east). OT 10.30 / 10.45, £1.50. CP free, B&B, TI, TS, SIG, LB, C, DF, WIN, LB.

CLASSIFIED

Classified advertisements 58p per word (VAT inc.) minimum 14 words £8.12. All classified advertisements must be prepaid. Please write clearly. No responsibility accepted for errors. Latest date for acceptance is 1st of the month prior to publication.

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The Last Word

A First HF Contact

Congratulations on the result of all the hard work towards the Morse-free access to the HF bands. My first contact under the new terms was at 0810UTC on 26 July. Why so late? I had no resonant antenna for any HF band and no ATU available. First job, build a 20m indoor dipole from what was available (I have a long narrow flat on top floor of a three storey block). Tune same. Check on low power, SWR better than 2:1 @ 5W. Wind up power to 100W, quick test, lots of smoke from what had been a very reliable 20A switch mode PSU. Quickly find another PSU (only 5 – 8A). Wind power back down to 5W. Tune around 20m, trouble is I don't speak Spanish or Italian, so tune a bit more, and answer a CQ from DJ8CL, and there I am. OK, so not the greatest DX, and as I haven't been active for five years, I didn't even have a logbook. The logbook problem was quickly solved by downloading *XMlog*.

S J Cook, G8CYY

...In 1976 I immigrated to Canada whilst holding the UK call G8BBP. Upon arrival I took the Canadian 10WPM Morse test (at that time Canada did not have a code-free licence) and, whilst waiting for my VE3 callsign to be issued, was granted permission by the Dept of Communications to use my UK call on all HF bands on CW. So for two months I was operating as G8BBP/VE3, which caused a certain amount of confusion for UK contacts! Would this be the first documented case of a Class B licensee operating legally on HF – and on HF CW to boot?

**Keith Ballinger, VA3QF
(formerly G8BBP)**

The Future Use of Morse

With the news of the ending of the Morse requirement for class B amateurs to operate on the HF bands – and I welcome this move – will the Society continue to promote CW as a mode to all new amateurs and, if so, what form will this take? CW still remains an excellent mode, is in no way outdated and should be actively encouraged on its merits.

Peter Weatherall, G3MLO

...I understand that those wanting to operate HF abroad under CEPT or other reciprocal arrangements still need to have passed the test for most countries. How are they going to do that? It might be useful to continue the tests for that purpose if that is acceptable.

Lawrence Woolf, GJ3RAX

[The Society's policy continues to be the promotion of the use of CW as a mode of operation. The Morse Assessment will continue to be an integral part of Foundation Licence training. The Society is taking steps for 'Morse Speed' tests to be available for those amateurs who wish to improve their skills. The Society will seek to have any certification recognised by those CEPT countries which have decided to retain a Morse test – Peter Kirby, G0TWW, General Manager.]

40m Expansion

What great news about the extension to the 7MHz band. I can only imagine the hours and hours of hard work put in by the IARU, its member societies and CEPT coordinator, and they all deserve our praise. My first action on receiving the August *RadCom* was to fire up my old TS-830S on 7.2MHz into an artificial aerial. A satisfactory steady-carrier power of 19.5dBW was obtained, so I am ready to go. On the very day that the extension is released to us by the RA, I shall call CQ somewhere between 7.1 and 7.2MHz at 0001 – provided I can find a space between the 'footnote' commercial stations.

B Harris, G3GTF

90 Years of RSGB

I have thoroughly enjoyed reading Pat Hawker's 90 year record of RSGB activities and was very pleased to see the original holder of my current callsign, my father W H Matthews, G2CD, in the photo on page 23 of the August issue (front row, standing, left hand side, in the light coloured jacket). I also note there Jim Payne, G2XP, extreme right, kneeling with specs and beret, and wonder whether the Sutton & Cheam RS recognise him, since they currently hold his callsign?

Pat refers to 'Eddy' Edwards, G8TL, whom I remember as Jimmy Edwards of Ilford, one of dad's VIs during the war. Happy memories from my childhood, when I used to accompany the 'old man' during trips in his rather old Austin 7 that he used to travel from VI to VI (using

the 'red' petrol issued in those days!).

Many thanks for arousing old memories of dad and the M15/M16 days!

**Ray Matthews,
the current G2CD**

...I would like to record my appreciation of your special feature '90 Years Serving Amateur Radio' in the July and August issues of *RadCom*. On page 22 of the August issue is a photo of Gerry Openshaw, G2BTO, operating some impressive-looking Marconi DF equipment. Does anyone know the type numbers of these radios? I ask because I own two large Marconi HF DF receivers (B21, B36) which physically resemble the equipment illustrated and, among other things, share the same type of band-change control – the large T-bars visible in the photo. The B21 and B36 were intended for naval use, but appear to be contemporary. Any feedback would be much appreciated.

Neil Clyne, G8LIU

Cheers!

I applaud the Society for commissioning a celebration ale for its 90th year, and good it is too. It does prompt me to ask how many Society members are also CAMRA [Campaign for Real Ale] members, as the two go very well together.

PS: I have just ordered two more cases.

Geoff Day, G4DED

Science, Engineering and All That Technical Stuff

The RSGB is to be congratulated for its part helping to put in place one of most forward-looking licence structures in the amateur world. We have some new entrants to the hobby, new licences, upgrades for former Class B holders. Great! But what about us old technical buffers? Brothers and sisters, our differentials have been thoroughly eroded and it's time for action. Amateur radio is a fantastic hobby, but those in positions of power need to stop deluding themselves that the use people make of it is still 100% about "self training in the art". While this is still the *raison d'être* for many in the hobby much of amateur radio is now just about appliance operating. If those in power want to be able to say it's still a technical hobby (to defend the need for all the spectrum we enjoy and as a gateway to a strong UK engineering sector), let

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them do something positive to support those with a scientific calculator, hot soldering iron and an engineering mind at the ready.

So come on RSGB! What about an extra or advanced class licence, based around the principle of increased freedom for those who fail to appreciate the need to buy a half-size G5RV from a shop? Fellow members, let's have a debate about what might be the additional privileges of such a ticket and convince the RSGB of the need to lobby the RA for its early introduction. Examples could include more output power, phone patching, personal repeaters, addition to the amateur schedule of the UK and CEPT CB bands. Please swell the RSGB post-bag. Brickbats and other correspondence also welcome to g4fph@mjha.co.uk

Mark Hill, G4FPH

[Mark implies that 'appliance operating' means that the operator is not learning anything, but surely this is far from the truth? 'Self-training' in radio communications techniques surely includes learning about HF and VHF propagation, antennas, CW and voice operating techniques, not to mention languages and a vastly superior knowledge of world geography than the average man on the street, all of which can be achieved by 'appliance operating'. 'Self-training' certainly includes the more technical aspects of amateur radio, but the term should not be taken to mean that exclusively. Fortunately amateur radio is wide enough to encompass many different aspects and it is 'horses for courses' as to what an individual gets out of his or her licence - Ed.]

Evolution of the Beam Antenna

I have been asked by a reader whether the early antenna work by Mr E C Crossett, 1CCZ, was based on the work by Yagi/Uda or if the development occurred independently? The October 1928 *QST* article by 1CCZ is well referenced to Yagi and Meissner. Most of the *QST* articles were well referenced so that a sequence of discovery and development can be traced. All articles from the *T&R Bulletin* used in 'Evolution of the Beam Antenna' do not have references, so the sequence cannot be traced and influence can only be derived through article context.

Peter Dodd, G3LDO

Enthusiastic Winners!

Just a brief note to say thank you for the pair of tickets for the Royal International Air Tattoo (RIAT) at RAF Fairford [competition in the June *RadCom* - Ed]. We went on Saturday and it was a fantastic day! Good weather, a great crowd, and what a display. Words fail me... fabulous, absolutely unbelievable.

Many, many thanks.

David Barker, G7RCP

...It is not often that I win anything in competitions, so I am highly delighted to be one of your winners in the RIAT competition. As a former RAFVR pilot, and aviation writer, I have flown in a Lancaster, and Harrier Jump Jet, and been up with the Red Arrows. So - you can be sure that I will enjoy myself, seeing these aircraft again.

Brian Vaughton, GOHRH

Cheer Up!

Having recently returned from university with severe withdrawal symptoms from the lack of HF operation, I was taken aback, and almost depressed, to hear the HF bands awash with operators complaining about recent propagation and overall conditions. Well, I have to admit, things have been a little quiet, but that's not to say there isn't any good 'stuff' out there! I have found 40m of particular interest, by both day and night. In the evenings there seems to be the almost ever presence of John, VK6WC, giving out some cracking signals. Furthermore, by day, there has been Tom, G0SBW/Pedestrian Mobile, on his costal walks in Essex, and Graham, G0UIF, bored in his workshop using a metal tape measure as an antenna (no excuses for getting the antenna measurements wrong I guess?) Things may be quiet, but I am enjoying myself. Come on, guys and girls, at least there are some conditions to moan about!

David John Turner, MWODJT

Suspicious Operation

While operating from Guernsey as GU4YWY/M, which I do two or three times a year while visiting my son and grandchildren, I went to my usual spot on the headland at Port Soif at about 9.00 am. Just after I had put up my aerials, an Outbacker on the boot and 10m whip on the roof, at about 9.10 am a police car steamed up alongside and the policeman asked me to step out of the car. I had been reported by a local for acting suspiciously with a car brimming with aerials. We had a laugh about it and he took my particulars, but like he said if they get a report they have to follow it up. It just goes to show you can't be too careful these days.

Bill Slater, G4YWY

[You are advised to keep a copy of your licence and BR68 booklet with you when operating mobile or portable for just such contingencies - Ed.]

Rugby Reminiscence

When I read the piece from Bob Harrison, G4LMF, in the June *RadCom* News about the BT radio station at Rugby (GBR) ceasing operation on 31 March after over 77 years of continuous operation, it brought back happy memories to

me. Nearly 70 years ago, in 1934, I visited GBR with the Nottingham Amateur Radio Club. Although transmissions from GBR were automatic, on this occasion I actually went on the key. I sent "VVV G5OW on key. Testing, VVV". At that time it was a great thrill to me sending to the world. Thanks Bob.

Bill Wigg, G5OW

Three Generation QSO

On 26 June, myself, GM3JOA, in Edinburgh; my son Mike, GW4NSZ (working in Wales with 5 watts); and my grandson Richard, M3NSZ, in Cheltenham (age 15, with 10 watts) had a three-way contact. This is possibly not an unusual event, but for me it was a very memorable one.

H E (Bert) Stanway, GM3JOA

New Full Licensee

Re: the final C&G RAE in December: due to the nature of the work I do, scheduled lessons are impossible, so the three-stage route to the full licence looked like being a non-starter. Last August I figured, "do the RAE now, or enjoy the fun of [being an] SWL". I have some amateur electronics experience, so I did one of Petri's multiple choice books - unrevised (the questions I got wrong told me where I needed to study); and 20 minutes every day with BR68 (returning to page 1 each time I reached the end) to get a grip of Licensing conditions. December's exam went well, except for a slight problem with circuit recognition.

Andrew Davies, MORSY, RS186333

DX and the M3s

I enjoyed reading the 'top tips' on contacting DX stations in *RadCom* ('Down to Earth', 'Guide to HF Operating' May/June 2003). I have been operating from abroad for 15 years, in Cyprus (ZC4), Bahrein (A92) and am now in Muscat, Oman (A4). The articles served as a refresher course.

Now in A45-land, when I am lucky to clear the wall of QRM and contact UK stations, often by their slick and canny operating, I am delighted to hear, for the first time, many M3 stations. My record this week is one youngster aged 9 (he said) and a 13-year old - even his mum was an M3. Their operating style was good and I will personally carry their QSL cards back to the UK when I leave.

Finally, every so often, I clear my frequency for a short period and only accept QRP stations - so far the 1kW Euro operators are behaving themselves. Come on the M3s - listen out 14270/21270 Sat pm/Sunday am from 0500UTC: the early bird gets the DX. I'd be glad to arrange a sched, CW too.

David Griffith, A47RS/G0OAB davidgriffith@hotmail.com



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| PRO-SET-PLUS-IC | Large H/phones with IC & HC-4 | £219.95 B |
| PRO-SET-4 | Large H/phones with HC-4 element | £129.95 B |
| PRO-SET-5 | Large H/phones with HC-5 element | £129.95 B |
| PRO-SET-IC | Large H/phones with ICOM element | £149.95 B |

bhi NES10-2 DSP SPEAKER £99.95 B



Combined speaker and programmable DSP unit. Offers dramatic noise reduction, even reduces annoying hetrodynes. 8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC

bhi NES-5 DSP SPEAKER £79.95 B



Combined speaker and fixed setting DSP unit. Offers same dramatic noise and hetrodyne reduction. (Formally NESCB) 8 Ohms, 3.5mm jack plug, 12-24V DC 500mA

bhi NEIM1031 **NEW** £129.95 B



NOISE ELIMINATING IN-LINE MODULE

- * Noise attn -20dB (typical) * Noise Attn levels 8
- * Audio output power 2.5W RMS max (8 Ohms)
- * Audio connections: Line level in/out (RCA Phono), Audio in/out 3.5mm mono jack * Line in impedance 10K
- * Line o/p impedance 100 Ohms * Line in sensitivity 300mV -2V RMS * Headphone socket 3.5mm mono jack * Power 12-24V DC 500mA

WATSON W-25SM PSU £79.95 B



Very popular budget switch mode power supply. *Output voltage 13.8V DC *Output current of 22A (25A peak) *Front panel output terminals *Over current & voltage protection *Quiet operation

WATSON W-25AM PSU £89.95 C



DC power supply for the shack & esp. for use with 100W transceivers. Separate voltage and current meters. *Output voltage 0-15V DC *Output current of 25A (30A peak). *3 sets of output terminals *10A cigar socket. *Over current protection

WATSON W-5A PSU £29.95 B



DC power supply for the shack and low power QRP transceivers. *Output voltage 13.8V DC *Output current of 5A (7A peak) *Front panel output terminals *Over current protection

LOWE SPS-8400 PSU £99.95 C



A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver.

MANSON EP-925 PSU £99.95 C



A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. *Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

AVAIR AV-200 VSWR PWR METER £49.95 B



Ideal for HF and VHF operation. It features high power handling up to 400W * 1.8-180MHz * 5W, 20W, 200W, 400W * Av or PEP

AVAIR AV-400 VSWR PWR METER £49.95 B



Ideal for VHF and UHF operation. It features high power handling up to 400W * 140-525MHz * 5W, 20W, 200W, 400W * Av or PEP

AVAIR AV-600 VSWR PWR METER £69.95 B



Two sensors used for HF and VHF/UHF operation. * 1.8-160MHz, 140-525MHz * 5W, 20W, 200W, 400W * Av or PEP

LDG Z-11 AUTOTUNER £209.95 B



IDEAL FOR YOUR FT-817

An auto ATU to match the FT-817. 1.8MHz to 30MHz up to 60W. Latching relays means very low current and almost zero when not tuning.

WEST MOUNTAIN RIGBLASTERS



- RIGblaster pro** Data interface 8-pin/mod, Cd & cables **£299.95 B**
- RIGblaster Plus** Data interface 8-pin/mod, Cd & cables **£139.95 B**
- RIGblaster M8** Data interface 8-pin, software & cables **£109.95 B**
- RIGblaster M4** Data interface 4-pin, software & cables **£109.95 B**
- Rigblaster RJ** Data interface RJ45, software & cables **£109.95 B**
- RIGblaster nomic8P** Data interface 8-pin, software & cables **£59.95 B**
- RIGblaster nomicRJ** Data interface RJ, software & cables **£59.95 B**
- FT100-CBL** Adapts all units to FT100 input **£12.95 A**
- RB-CD** Standard RIGblaster program CD **£9.95 A**

FREQUENCY COUNTERS

WATSON



The **FC-130** is an ideal frequency counter for the shack, mobile or portable use. Supplied complete with Ni-Cads, charger and telescopic whip.

- Super Searcher** RF finder & freq. cnter 10MHz-3GHz **£99.95 B**
- Super Hunter** Frequency counter 10Hz-3GHz **£149.95 B**
- Hunter** Frequency counter 10MHz-3GHz **£59.95 B**
- FC-130** Frequency counter 1MHz-3GHz **£59.95 B**

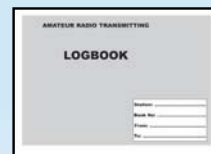
OPTOELECTRONICS



More than just a frequency counter, the **Xplorer** is a complete mini test receiver. High speed nearfield FM receiver 30MHz to 3GHz. Automatically records up to 500 frequencies in memory, built-in CI-V interface.

- Xplorer** Freq. cnter / CTCSS/DTMF decode **£849.95 B**
- Digital-Scout** Digital Freq. counter 60MHz-2.6GHz **£529.95 C**
- Scout** Freq. finder 10MHz-1.4GHz **£379.95 B**
- Mini-Scout** Freq. finder (no memories) **£199.95 B**
- Micro-Counter** Micro freq. counter 10MHz-1.2GHz **£119.95 B**
- Cub** Mini counter 1-2.8GHz **£134.95 B**

TRANSMITTING LOGBOOK NEW £4.99 A



Traditional Logbook for Radio Amateurs, A4 spiral bound for ease of use plus updated Prefix List and room for extra notes. A logbook is a legal requirement for any radio station.

MOBILE LOGBOOK NEW £4.99 A



You've asked for one so here it is - the Radio Amateurs Mobile/Portable Logbook. A5 size, it also contains relevant repeater information. A mobile logbook is not a legal requirement.

RAMSEY HR RECEIVER KIT SERIES

SPECIAL OFFER



- Models: 20m, 40m, 80m
- NE-602 IC
- Output: 8 Ohms headphones
- Supply: 9V DC PP3 Batt.
- Case & knob set (CHR): Optional

These single band radios use direct conversion with varicap tuning and have amazing sensitivity. They offer reception of SSB, CW and AM and are ideal as part of a QRP station.

Models: HR-20, HR-40, HR-80 all ~~£31.95 B~~ **£19.95 A**

CHR (optional case & knob set) ~~£14.95 B~~ **£9.95 A**

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4 WEB MAIL ORDER

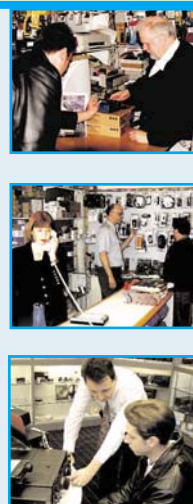


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HF EXCITEMENT

INTRODUCING YAESU'S ALL NEW HF MOBILE

Blending leading-edge technologies developed on the FT-897 and MARK-V FT1000MP transceivers, the FT-857 is the world's smallest HF/VHF/UHF Multimode Transceiver, and it's available now!

FT-857 DESIGN HIGHLIGHTS

The FT-857 is a high-performance, ultra-compact transceiver operating on the 160-10 meter HF bands, plus the 50, 144, and 430 MHz VHF/UHF bands. Providing 100 Watts of power on HF/6 meters, 50 Watts on 2 meters, and 20 Watts on 70 cm, the FT-857 is ideal for mobile, vacation, DX-pedition, or home use when space is at a premium.

Utilising the renowned receiver performance of the FT-897 and MARK-VFT-1000MP, the FT-857 features wide dynamic range, optional Digital Signal Processing, and outstanding audio.

(*DSP supplied as standard in the UK)

The wide array of convenience features includes a 32-colour display; Spectrum Scope; built-in keyer with memory and beacon mode; U.S. Weather Band reception; 200 memories with Alpha-Numeric labels; AM Aircraft reception; detachable front panel (optional YSK-857 required); and much, much more.

You've asked for it, and it's here today: the FT-857 New Mobile. . . from the engineers at Yaesu!

New Remote Control DTMF Microphone MH-59ABJ (Option)

The optional MH-59ABJ Remote Microphone provides control of the major functions of the FT-857 from the microphone's keypad. The MH-59ABJ includes a rotary control knob for adjusting the operating frequency and the receiver volume level.



| | |
|------------------|----------------------------|
| LOCK switch | SEL DIAL key and indicator |
| PTT switch | SEL knob |
| Keypad | 9 (BAND UP) key |
| 1 (DISP) key | * key |
| 2 (MHz) key | 0 (CNTL) key |
| 3 (CLAR) key | ENT (#) key |
| 4 (HOME) key | A key |
| 5 (MODE) key | B key |
| 6 (MODE) key | C key |
| 7 (V/M) key | F (D) key |
| 8 (BAND DWN) key | ACC key |
| | PWR (FAST) key |
| | P1 key |
| | P2 key |

Actual Size

HF EXCITEMENT

FT-857

ULTRA-COMPACT HF/VHF/UHF
100 W ALL-MODE TRANSCEIVER
(HF/6m 100W, 2m 50W, 70cm 20W)

For the latest Yaesu news, visit us on the Internet:
<http://www.yaesu.co.uk>

Specifications subject to change without notice. Some accessories and or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

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Choice of the world's top DX'ers

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